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THE PALAEMONOID SHRIMP FAUNA (CRUSTACEA: DECAPODA: CARIDEA) OF THE COBOURG PENINSULA, NORTHERN TERRITORY.

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ABSTRACT

A 1981 - 1986 survey of the marine fauna of Port Essington, Cobourg Peninsula, Arnhem Land, northern Australia, confirms the presence of 61 species of palaemonoid shrimp. Three new species, *Periclimenaeus serrula* sp. nov., *Periclimenaeus solitus* sp. nov., and *Periclimenes cobourgi* sp. nov., are described, and a further 25 species added to the fauna of the Northern Territory, of which *Periclimenaeus stylirostris, Periclimenes novaecaledoniae, and Periclimenes sinensis* are new records for Australia. This report provides the first general account of the palaemonoid fauna of a larger focal area from northern Australia, and one third of the pontoniine shrimps known to occur in Australian waters are now known to occur in the Port Essington region. The survey has, in total, provided eight species new to science and 34 species have been added to the fauna of the Northern Territory.

KEYWORDS: Faunistic survey, northern Australia, Crustacea, Decapoda, Palaemonoidea, new species, *Periclimenaeus serrula* sp. nov., *Periclimenaeus solitus* sp. nov., *Periclimenes cobourgi* sp. nov.

INTRODUCTION

Until recent years, the tropical marine fauna of northern Australia has attracted little scientific attention, and the caridean shrimp fauna has remained largely undocumented. H.M.S. *Alert* passed through Port Essington in 1882, but did not report any shrimps from the collections made from Arnhem Land.

From 1981 - 1986 the Northern Territory Museum carried out a series of field studies of the fauna of Port Essington and adjacent Cobourg Peninsula localities. The operations were based upon the FV *Alegrias* and carried out with the financial support of the Heritage Commission. Abundant material was obtained for study, which is now preserved in the collections of the Northern Territory Museum (NTM). Most of the area studied is now included in the Gurig National Park, established in 1981.

Much of the material collected was new to the northern Australian fauna and some species new to science. Some of these species have been described or reported on in earlier publications (Bruce 1983a, 1983b, 1987a, 1987b, 1990a). An account is now presented of the palaemonoid fauna as a whole, which clearly indicates a rich species diversity, although one that would certainly be augmented by further collections. This report includes descriptions of two new species of *Periclimenaeus*, one new species of *Periclimenes*, and the first records of *Periclimenaeus stylirostris*, *Periclimenes novaecaledoniae* and *Periclimenes sinensis* from Australian waters. The area consists largely of shallow - water muddy substrates, with rocky headlands separating sandy bays, with areas of mangrove inshore. Coral reefs are poorly represented, except for a well developed reef around New Year Island and a small reef at Coral Bay. Most of the material was hand-collected, by hand net, using snorkel or SCUBA, often with the use of rotenone, with a few collections made by a small trawl. As much material was obtained from dive-bags containing a number of potential host organisms, some accidental transfers from host animals may have occurred.

Details of the stations from which specimens were collected are provided in Table 1 and the positions of the localities are illustrated in Figures 1-2. Restricted synonymies only are provided, with the

original description, major name changes and Northern Territory reports included. CL refers to the postorbital carapace length. LWS refers to low water spring tide level and LW to low water tide level. NTM refers to the Northern Territory Museum.

SYSTEMATIC ACCOUNT

Palaemonidae Rafinesque, 1815
Subfamily Palaemoninae Rafinesque, 1815

Palaemon semmelinkii (De Man)

Leander semmelinkii De Man, 1881:137.

Palaemon (Paleander) semmelinkii - Holthuis 1950: 57-60, fig. 11.

Palaemon semmelinkii - Bruce 1987b: 58, fig. 2.

Material examined. 5 spms (1 ovig.♀), stn CP/49, Caiman Creek, LWS, 13 May 1983, coll. N.L. Bruce, NTM Cr.009468.

Australian distribution. Northern Territory: Groote Eylandt (Bruce 1987b).

Further distribution. Type locality: Makassar, Sulawesi, Indonesia. Also known from India; Burma; the Nicobar Islands; Thailand; Malaya; Singapore; Indonesia, Sumatra, Java; and the Philippines.

Palaemon serrifer (Stimpson)

Leander serrifer Stimpson, 1860: 41; - Kemp 1925: 36.

Palaemon serrifer - Rathbun 1902: 52; - Holthuis 1950: 83-86, fig. 18; - Bruce 1987a: 57, fig. 1; 1988b: 227.

Table 1. Summary of station data: Cobourg Peninsula.

Stn	Locality	Position	Date	Habitat	Depth
CP/2	Kennedy Bay	11°12.8'S 132°05.6'E	22.6.81	coral reef	2m
CP/5	Coral Bay	11°11.2'S 132°03.6'E	23.6.81	coral reef	2-3m
CP/6	Coral Bay	11°11.2'S 132°03.6'E	23.6.81	off beach	3-4m
CP/7	Black Point	11°09.0'S 131°51.4'E	23.6.81	sandy beach	0.5m
CP/8	Coral Bay	11°11.2'S 132°03.6'E	24.6.81	coral reef	2-3m
CP/9	Coral Bay	11°11.3'S 132°03.75'E	24.6.81	large shore pool	0.5m
CP/10	Black Point	11°09.0'S 132°08.2'E	18.7.81	rocky reef with algae	1-2m
CP/12	Coral Bay	11°11.3'S 132°03.75'E	19.7.81	large shore pool	< 0.5m
CP/13	Coral Bay	11°11.3'S 132°03.75'E	20.7.81	large shore pool	0.5m
CP/14	Burford Island	11°29.3'S 131°57.5'E	13.10.81	reef flat	LWS
CP/16	Wanaray Point, Trepang Bay	11°08.0'S 131°57.7'E	14.10.81	coral reef	2m
CP/17	Wanaray Point, Trepang Bay	11°07.0'S 131°58.0'E	15.10.81	coral reef	LWS
CP/18	Midjari Point, Trepang Bay	11°10.7'S 131°57.2'E	16.10.81	muddy reef flat pools	LWS
CP/20	Walford Point, Coral Bay	11°10.2'S 132°04.0'E	17.10.81	coral reef bank	LWS
CP/21	Coral Bay	11°10.4'S 132°03.0'E	18.10.81	coral reef on rocky outcrop	1-3m
CP/23	Walford Point	11°09.4'S 132°04.0'E	19.10.81		5m
HL81-22	NW of Orontes Reef	10°58.0'S 132°10.0'E	19.10.81	prawn trawl (3 hr)	27m
CP/24	Smith Point	11°07.0'S 132°08.0'E	19.10.81		4-5m
CP/26	Sandy Island No. 2	11°05.5'S 132°17.0'E	20.10.81	coral reef slope	7m
CP/27	Sandy Island No. 2	11°05.5'S 132°17.0'E	21.10.81		10m
CP/28	Sandy Island No.2	11°07.0'S 132°17.5'E	22.10.81	coarse sandy bottom	6-7m
CP/29	Sandy Island No. 2	11°05.6'S 132°19.0'E	22.10.81	sand with rock outcrops	8-9m
CP/30	Black Point	11°09.0'S 132°08.5'E	29.4.82	rocky outcrop	10-12m
CP/33	Port Bremer	11°08.5'S 132°18.8'E	1.5.82	coral reef with *Turbinaria*	6m
CP/34	Danger Point	11°39.0'S 132°20.4'E	1.5.82	sargassum bed	2m
CP/35	Danger Point	11°39.0'S 132°20.4'E	1.5.82	sandy beach	4m
CP/36	Sandy Island No. 2	11°36.8'S 132°17.4'E	2.5.82		13m
CP/37	Table Head	11°13.5'S 132°10.5'E	3.5.82	rocky reef with corals	1-3m
CP/38	Table Head	11°13.5'S 132°11.5'E	4.5.82	rocky reef with *Turbinaria*	2-4m
CP/39	Caiman Creek	11°14.0'S 132°12.0'E	4.5.82	sandy flats & pools	LW
CP/40	Orontes Reef	11°03.6'S 132°05.0'E	5.5.82	coral bank, offshore	3m
NY/1	New Year Island	10°54.5'S 133°01.0'E	13.10.82	coral reef	10m
HL82-60	New Year Island	10°54.5'S 133°01.0'E	13.10.82	night light at anchor	surface
HL82-73	Oxley Island	11°10.0'S 131°58.0'E	14.10.82	night light at anchor	surface
NY/2	New Year Island	10°54.5'S 133°01.0'E	14.10.82	coral reef, few algae	10m
NY/3	New Year Island	10°55.0'S 133°01.8'E	14.10.82	coral reef slope	16m
NY/4	McCluer Island	11°02.0'S 132°58.5'E	16.10.82	coral reef	7m
NY/5	McCluer Island	11°02.6'S 132°58.5'E	16.10.82	pool behind rubble ridge	1m
NY/8	Oxley Island	10°59.0'S 132°48.8'E	19.10.32	coral reef	LWS
NY/9	Oxley Island	10°59.0'S 132°48.8'E	20.10.82	coral reef, edge of flat	LWS

Material examined. 1♀, 1♂, stn CP/9, Coral Bay, 0.5 m, 24 June 1981, coll. A.J. Bruce, NTM Cr.008541. 1♂, 1♀, 1 ovig.♀, stn CP/12, Coral Bay, 0.1-0.5 m, 19 July 1981, coll. A.J. Bruce, NTM Cr.000909. 1 juv., stn CP/26, Sandy Island No. 2, 7 m, 20 October 1981, coll. P.N. Alderslade, J.N.A. Hooper, NTM Cr.008578. 12 spms (2 ovig.♀), stn CP/45, Table Head, LW, 11 May 1983, coll. A.J. Bruce, NTM Cr.009350. 3 spms (1 ovig.♀), stn CP/87, Victoria Settlement, LW, 8 August 1986, coll. R.C. Willan, NTM Cr.004096.

Australian distribution. Northern Territory: Port Essington (Bruce 1987a), Darwin Harbour (Bruce 1988b). Queensland: Michaelmas Reef, Capre Cay, Swain Reefs.

Further distribution. Type localities: Hong Kong; O-Shima, Japan. Also from Southeast Asia, from India to Vladivostok; Japan; Indonesia and northern Australia (Bruce 1980: col. fig.).

Urocaridella antonbruunii (Bruce)

Periclimenes antonbruunii Bruce, 1967: 45-53, figs 19-22.

Leandrites cyrtorhynchus Fujino and Miyake 1969a: 143-149, figs 1-3; - Bruce 1983a: 42.

Urocaridella antonbruunii - Chace and Bruce 1993:43.

Material examined. 1 spm., stn CP/21, Coral Bay, 1-3 m, in cave, 18 October 1981, coll. P.N. Alderslade, H.K. Larson, J.R. Hanley, NTM Cr.001311.

Remarks. This taxon was first reported as *Periclimenes antonbruunii* on the basis of a single small specimen from the Comoro Islands.

Table 1 (cont.). Summary of station data: Cobourg Peninsula.

Stn	Locality	Position	Date	Habitat	Depth
NY/10	Oxley Island	10°59.0'S 132°48.7'E	21.10.82	coral reef	14m
CP/44	Table Head	11°14.8'S 132°10.8'E	11.5.83	coral & sand	4-5m
CP/45	Table Head	11°14.8'S 132°11.2'E	11.5.83	basalt reef flat pond	LW
CP/46	Table Head	11°14.7'S 132°10.2'E	12.5.83	rocky reef	5m
CP/49	Caiman Creek	11°14.2'S 132°12.2'E	13.5.83	sea grass bank in creek	LW
CP/51	Table Head	11°14.4'S 132°10.8'E	13.5.83	coral reef	4m
CP/58	Caiman Creek	11°13.9'S 132°12.3'E	15.5.83	saltwater creek	<1m
CP/60	Coral Bay	11°11.0'S 132°03.4'E	16.5.83	coral reef edge	<6m
CP/61	Coral Bay	11°11.0'S 132°03.4'E	17.5.83	sheltered coral reef	4m
CP/62	Walford Point	11°10.5'S 132°03.8'E	17.5.83	coral reef	4m
CP/64	Walford Point	11°12.0'S 132°03.0'E	18.5.83	coral reef	3-4m
CP/65	Middle Bay	11°11.0'S 132°02.0'E	18.5.83	sand beach	0.5m
CP/68	Coral Bay	11°10.4'S 132°02.8'E	19.5.83	algal bank	2-3m
CP/69	Table Head	11°14.4'S 132°10.8'E	12.9.85	coral reef	1-4m
CP/70	Coral Bay	11°11.2'S 132°02.8'E	12.9.85	coral reef	2-5m
CP/71	Coral Bay	11°10.4'S 132°02.8'E	13.9.85	coral reef	2-5m
CP/72	Table Head	11°14.6'S 132°10.5'E	13.9.85		3m
CP/73	Table Head	11°14.6'S 132°10.5'E	14.9.85	coral bommie	6-8m
CP/74	Berkeley Bay	11°14.8'S 132°11.4'E	14.9.85	weedy reef	3m
CP/75	Coral Bay	11°11.1'S 132°03.4'E	15.9.85	coral reef with fish pond	ca.5m
CP/76	Coral Bay	11°11.2'S 132°02.8'E	15.9.85	coral reef	6m
CP/77	Orontes Reef	11°04.5'S 132°04.8'E	16.9.85	off-shore bank	10m
CP/78	Orontes Reef	11°04.5'S 132°04.8'E	16.9.85	off-shore bank	19m
CP/80	Orontes Reef	11°04.5'S 132°04.8'E	17.9.85		10m
CP/81	Kennedy Bay	11°12.8'S 132°05.6'E	17.9.85	seaward side of reef	2.5m
CP/82	Coral Bay	11°11.1'S 132°03.4'S	18.9.85	coral reef	5-6m
CP/83	Coral Bay	11°11.1'S 132°03.4'S	18.9.85	night-light	surface
CPV8	W\side of Barrow Bay	11°21.5'S 132°13.0'E	18.9.85	mud flat	LWS
CP/85	Orontes Reef	11°04.5'S 132°04.75'E	19.9.85		10-15m
CP/86	Table Head	11°13.5'S 132°11.5'E	7.8.86	rock bommie	8m
CP/87	Victoria Settlement	11°22.2'S 132°09.0'E	8.8.86		LW
CP/88	Orontes Reef	11°04.5'S 132°04.8'E	9.8.86	coral reef	8-10m
CP/90	Orontes Reef	11°04.5'S 132°04.8'E	10.8.86	coral reef	12m
CP/91	Orontes Reef	11°04.5'S 132°04.8'E	10.8.86	coral reef	?
CP/92	Orontes Reef	11°04.5'S 132°04.0'E	10.8.86	fine mud	15-22m
CP/93	Coral Bay	11°11.1'S 132°03.4'E	11.8.86		6-8m
CP/95	Coral Bay	11°11.0'S 132°03.4'E	12.8.86	coral reef, off fish pond	5-6m
CP/97	Coral Bay	11°11.2'S 132°02.8'E	12.8.86	coral reef	?
CP/98	Coral Bay	11°11.2'S 132°02.8'E	13.8.86		?
CP/99	Orontes Reef	11°04.5'S 132°04.8'E	13.8.86	rocky reef	11-12m

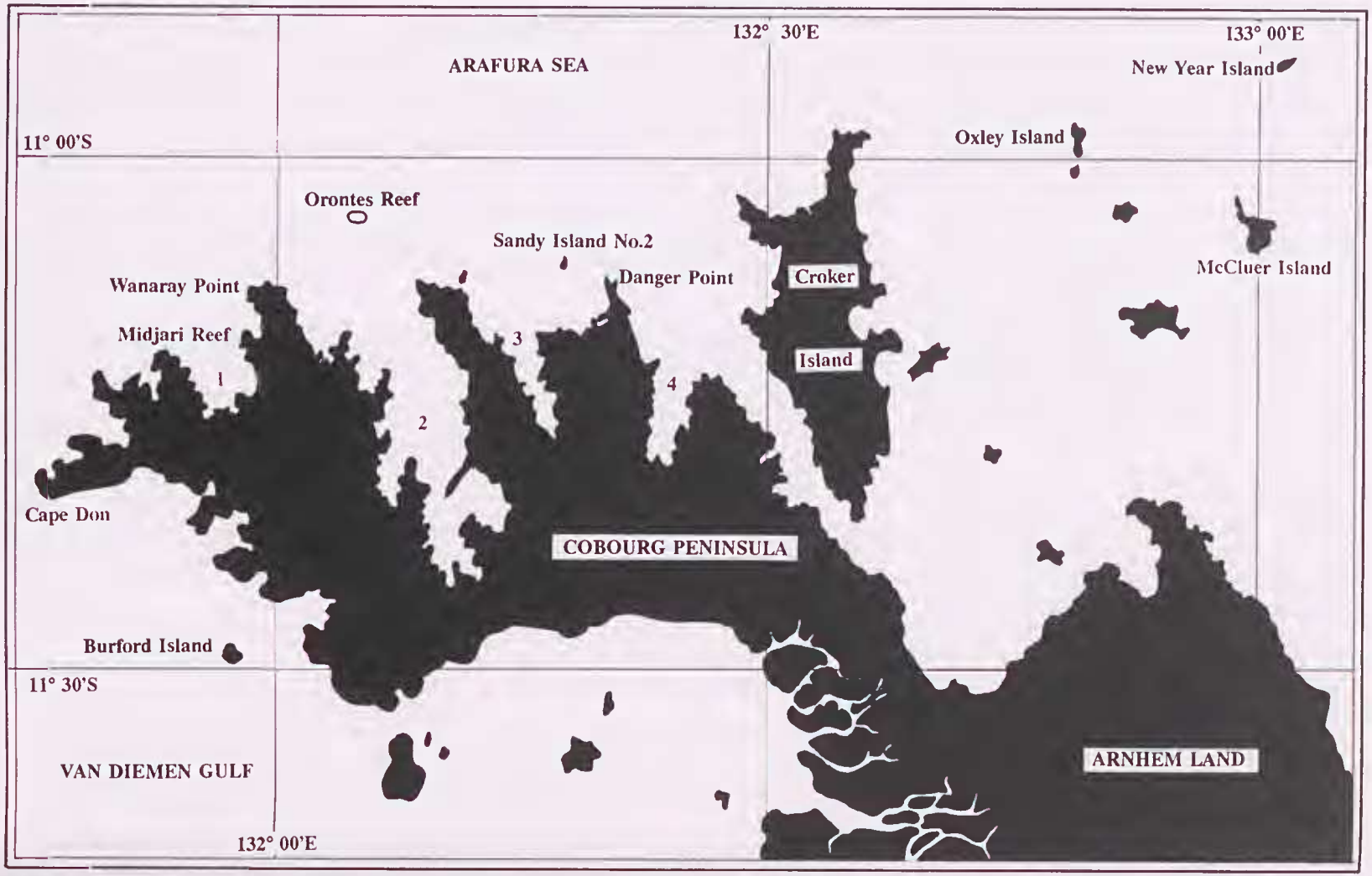

Fig. 1. Map of the Cobourg Peninsula region, Arnhem Land, indicating collection localities referred to in text. 1, Trepang Bay. 2, Port Essington. 3, Port Bremer. 4, Raffles Bay.

The specimen closely resembled larger adult specimens subsequently collected, and was later considered to be a juvenile, probably a first post-larval stage, as rudimentary exopods were present on the first and second pereiopods. The ambulatory dactyls were also minutely biunguiculate, as also occurs in the juveniles of some other palaemonine shrimps, such as the *dionyx* stage of *Macrobrachium* (Holthuis 1950). The third abdominal segment was also more strongly posterodorsally produced than in larger specimens. There have been no further reports of *P. antonbruunii* under that name. The larger specimens were referred to *Leandrites cyrtorhynchus* Fujino and Miyake (1969a), a species now known to be of widespread distribution. The species is now also well known as a fish cleaner. Both taxa are characterised in life by a colour pattern of red and white spots (Bruce 1980: col. fig.), and enough immature specimens have been collected to present a continuous series, so that they clearly represent a single species. Chace and Bruce (1993) re-establish the genus *Urocaridella* Borradaile, and removed this species from *Leandrites*, placing it in Borradaile's genus *Urocaridella*, on account of the similarities of the carapace and rostrum.

Australian distribution. Previously recorded in the Northern Territory from Darwin Harbour (Bruce 1983a). Also recorded from Heron Island, within the Great Barrier Reef (Bruce 1980).

Further distribution. Type locality: Pamanzi Island, Mayotte, Comoro Islands. Also reported from East Africa to Japan and New Caledonia.

Urocaridella sp. ?

Leandrites sp. Bruce, 1993: 36 (col. fig.).

Material examined. 4 spms, stn CP/20, Walford Point, LWS, 17 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.001338. 1 spm., same data as previous, NTM Cr.001339. 9 spms, same data as previous, Cr.001951. 2 spms, stn CP/21, Coral Bay, in cave, 1-3 m, 18 October 1981, coll. P.N. Alderslade *et al.*, NTM Cr.001336. 10 spms, same data as previous, in cave, NTM Cr.001337. 2♂, stn CP/23, Walford Point, 5 m, 19 October 1981, NTM Cr.005242.

Remarks. This taxon is distinguished from *Urocaridella antonbruunii* by its characteristic colour pattern, which consists of conspicuous yellow and black spots (Bruce 1993a). The pattern is consistent in all specimens, with minimal variation, although less well developed in small specimens. There are no intermediates with *U. antonbruunii*. The shrimps look and behave like a distinct species, but no morphological differences have been detected so far that can be used to separate the two taxa once the colour pattern has been lost after preservation. The taxon is therefore not provided with a specific name.

Fig. 2. Map of Port Essington, Cobourg Peninsula, indicating localities referred to in text.

This species, and *U. antonbruunii* probably represent a pair of closely related sibling species. A similar situation occurs in the taxa represented by *Coralliocaris venusta* Kemp, in which two distinctive colour patterns have been designated α and β (Bruce 1979b) (the colouration of the type material was not recorded, so that it is not possible to associate either of these colour patterns with the name designated by Kemp). Specimens, in this case also, always segregate by colour pattern. Other pairs of sibling species, such as *Periclimenes soror* Nobili and *P. bicolor* Edmondson, present similar taxonomic problems and are reviewed in Bruce (1979b). *Harpiliopsis depressa* (Stimpson) and *H. spinigera* (Ortmann), long synonymised, were first confirmed as distinct through the differences in colour pattern in live specimens, and

morphological features were subsequently established that now enable the identities of preserved material to be established. If live-colour patterns are consistently noted, then the morphological separation of these closely related taxa may become practicable.

Australian distribution. In addition to the Port Essington specimens, this taxon has also been found to occur in Darwin Harbour.

Subfamily Pontoniinae Kingsley, 1878

Anchistus australis Bruce

Anchistus australis Bruce, 1977: 56-62, figs 7-9; 1983a: 43-44.

Material examined. 4 spms, stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. J.N.A. Hooper, A.J. Bruce, P. Horner, in the bivalve mollusc *Tridacna* sp., NTM Cr.000091.

Australian distribution. Type locality: Capre Cay, Swain Reefs, Queensland. Northern Territory: Coral Bay, Port Essington (Bruce 1983a). Queensland: Michaelmas Reef.

Further distribution. Also known from Indonesia; New Caledonia; Fijian Islands and Marshall Islands.

Anchistus custos (Forsskål)

Cancer custos Forsskål, 1775: 94.

Harpilius inermis - Miers 1884: 291, pl. 32 fig. B.

Anchistus inermis - Borradaile 1898: 387; - Kemp 1922: 249-252, fig. 81.

Anchistus custos - Holthuis 1952: 105-109, figs 43-44; - Bruce 1983a: 44; 1988b:227.

Material examined. 2 spms, stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. P. Horner, J.N.A. Hooper, A.J. Bruce, in the bivalve mollusc *Pinna* sp., NTM Cr.000095. 1 ovig.♀, 1♂, stn CP/8, Coral Bay, 2-3 m, 24 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, in *Pinna* sp., NTM Cr.008549. 1 ovig.♀, 1♂, 2 juv., stn CP/17, Wanaray Point, Trepang Bay, LWS, 15 October 1981, coll. A.J. Bruce, P. Horner, NTM. Cr.008728. 1♂, 1 ovig.♀, stn CP/18, Midjari Point, Trepang Bay, LWS, 16 October 1981, coll. A.J. Bruce, NTM Cr.007591. 3♂, 3♀, stn CP/20, Walford Point, Coral Bay, LWS, 17 October 1981, coll. A.J. Bruce *et al.*, in *Pinna* sp., NTM Cr.000133. 2 spms, stn CP/21, Coral Bay, 1-3 m, 18 October 1981, coll. P.N. Alderslade *et al.*, in *Pinna* sp., NTM. Cr.001878. 2 spms, stn CP/27, Sandy Island No. 2, 10 m, 21 October 1981, coll. J.N.A. Hooper *et al.*, in *Pinna* sp., NTM Cr.003202. 1♂, 1♀, stn CP/28, Sandy Island No. 2, 6-7 m, 22 October 1981, coll. J. R. Hanley, in *Pinna* sp., NTM Cr.000163. 1♂, 1♀, stn CP/33, Port Bremer, 6 m, 1 May 1982, coll. P.N. Alderslade, in *Pinna bicolor*, NTM Cr.000298. 2 spms, stn CP/36, Sandy Island No. 2, 13 m, 2 April 1982, coll. J.N.A. Hooper, in *Pinna* sp., NTM Cr.000412. 2 spms, stn CP/37, Table Head, 1-3 m, 3 May 1982, coll. H.K. Larson, in *Pinna* sp., NTM Cr.002960. 6 spms, stn CP/38, Table Head, 2-4 m, 4 May 1982, coll. H.K. Larson *et al.*, in *Pinna* sp., NTM Cr.001962. 1♂, 1♀, stn CP/44, Table Head, 4-5 m, 11 May 1983, coll. N.L. Bruce, in large *Pinna* sp., NTM Cr.009408. 2 spms, stn CP/60, Coral Bay, < 6 m, 16 May 1983, coll. H.K. Larson, in *Pinna* sp., NTM Cr. 001740. 2 spms, same data as previous, NTM Cr.010256. 1♂, 1 ovig.♀, stn CP/68, Coral Bay, 2-3 m, 19 May 1983 coll. J.R. Hanley, N.L. Bruce, in *Pinna* sp., NTM Cr.009283. 2 spms, same data as previous, NTM Cr.010241. 2 spms, stn CP/69, Table Head, 1-4 m, 11 September 1985, coll. A.J. Bruce, in *Pinna* sp., NTM Cr.003219. 2 spms, stn CP/71, Coral Bay, LWS, 13 September 1985, coll. A.J. Bruce, in *Pinna* sp., NTM Cr.003226. 1 juv., stn CP/73, Table Head, 6-8 m, 14 September 1985, coll. C. Hood *et al.*, in *Pinna* sp., NTM Cr.007559. 3♂, 3 ovig.♀, same data as previous, NTM Cr.007560. 1 spm., stn CP/82, Coral Bay, 5-6 m, coll. R. Williams, P.N. Alderslade, in *Pinna* sp., NTM Cr.007575. 1♂, 1 ovig.♀, stn CP/86, Table Head, 8 m, 7 August 1986, C. Johnson *et al.*, in *Pinna deltoides*, NTM Cr.004097. 4 spms, stn CP/93, Coral Bay, 6-8 m, 11 August, 1986, coll. S. Slack-Smith, in *Pinna bicolor*, NTM Cr.004131. 4 spms, same data as previous., in *Pinna deltoides*, NTM Cr.004144. 2 spms, same data as previous, NTM Cr.004147.

Australian distribution. Northern Territory: Port Essington (Bruce 1983a), Darwin Harbour, East Point (Bruce 1988b). Queensland: Port Denison, Lizard Island, Magnetic Island, Swain Reefs, Bowen, Port Molle. South Australia: St. Vincent Gulf. Western Australia: Shark Bay, Monte Bello Islands.

Further distribution. Type locality: Loheia, Yemen. Common and widespread throughout most of the Indo-West Pacific region from the Red Sea, East Africa to Moçambique, to Japan, east to the Philippines; Solomon Islands and Fijian Islands.

Chernocaris placunae Johnson

Chernocaris placunae Johnson, 1967: 500-511, figs 1-12; - Bruce 1983a: 44; 1990b: 10.

Material examined. 6♂, 6 ovig.♀, stn HL81-22, Arafura Sea, 10°58'S 132°10'E, 27 m, 19 October 1981, trawl, F.V. *Anson*, coll. A.J. Bruce, NTM Cr.000102.

Remarks. The specimens have been previously noted by Bruce (1983a), representing only the second occurrence of this species. Unfortunately the locality of capture was incorrectly given and the correct position is as given above. As with the type material, the specimens were found in association with the bivalve mollusc *Placuna placenta* L.

Australian distribution. Arafura Sea, 10°58'S 132°10'E.

Further distribution. Type locality: Telok Paku, Singapore. No further records.

Conchodytes monodactylus Holthuis

Conchodytes monodactylus Holthuis, 1952: 200-204, figs 96-98; - Bruce 1983a: 44.

Material examined. 1 ovig.♀, 1♂, stn CP/29, Sandy Island No. 2, 8-9 m, 22 October 1981, coll. P. Horner, P.N. Alderslade, in bivalve mollusc *Pinna* sp., NTM Cr.000092. 1♂, 1♀, stn CP/30, Black Point, 10-12 m, 29 April 1982, coll. H.K. Larson, P. Horner, in *Pinna* sp. cf. *bicolor*, NTM Cr.000296. 2 spms, stn CP/91,. Orontes Reef, 10 August 1986, coll. S. Slack-Smith, NTM Cr.004124.

Australian distribution. Northern Territory: Sandy Island No. 2 (Bruce 1983a). Queensland: Magnetic Island.

Further distribution. Type localities: Takao, Taiwan; Lesser Sunda Islands, Indonesia. Also known from Singapore and Hong Kong.

Coralliocaris graminea (Dana)

Oedipus gramineus Dana, 1852: 25; 1855, pl. 37 fig. 3.

Coralliocaris graminea - Stimpson 1860: 38; - Bruce 1983a: 45.

Material examined. 1 spm., stn CP/8, Coral Bay, 2-3 m, 24 June 1981, parasitised by Hemiarthrinae bopyrid (NTM Cr.000049), coll. A.J. Bruce *et al.*, NTM Cr.010751. 1 spm., same data as previous, bopyridized by Hemiarthrinae (NTM Cr.000050), coll. A.J. Bruce *et al.*, NTM Cr.010752. 1♂, stn CP/17, Wanaray Point Reef, Trepang Bay, LWS, 15 October 1981, coll. A.J. Bruce, P. Horner, NTM Cr.008731. 1♂, 2 ovig.♀, stn CP/20, Walford Point, Coral Bay, LWS, 17 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.000118. 1 spm., stn CP/21, Coral Bay, 1-3 m, 18 October 1981, coll. P.N. Alderslade *et al.*, NTM Cr.001879. 3 spms (1♀, 1 juv.), stn NY/9, Oxley Island, LWS, 20 October 1982, on coral *Acropora* sp, coll. A.J. Bruce, NTM Cr.003165. 2 spms, stn CP/88, Orontes Reef, 8-10 m, 9 August 1986, coll. C. Johnson, R.C. Willan, on *Acropora* sp., NTM Cr.004103. 1 spm., stn CP/90, Orontes Reef, 12 m, 10 August 1986, coll. R.C. Willan, P. Davie, on *Acropora* sp., NTM Cr.004115.

Australian distribution. Northern Territory: Port Essington (Bruce, 1983a). Queensland: Heron Island, Myora, Palm Island, Falcon Island, Willis Island, Bet Reef, Restoration Rock.

Further distribution. Type locality: Rewa, Viti Levu, Fiji. Commonly and widely distributed, from the Red Sea and East Africa to the Bonin Islands, and Society Islands.

Coralliocaris viridis Bruce

Coralliocaris viridis Bruce, 1974: 22-224, fig. 1.

Material examined. 1♀, 3 ovig.♀, stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. A.J. Bruce, P. Horner, J.N.A. Hooper on coral *Acropora* sp., NTM Cr.008562. 1 ovig.♀, stn CP/8, Coral Bay, 2-3 m, 24 June 1981, coll. A.J. Bruce, P. Horner, J.N.A. Hooper, on *Acropora* sp., NTM Cr.008538. 1♂, same data as previous, NTM Cr.008543. 1 ovig.♀, same data as previous, NTM Cr.008563. 5 spms (2 ovig.♀), stn CP/37, Table Head, 1-3 m, 3 May 1982, on *Acropora* sp., coll. A.J. Bruce, NTM Cr.000303. 7 spms (2 ovig.♀, 2 juv.), stn CP/40, Orontes Reef, 3 m, 5 May 1982, coll. H.K. Larson, J.N.A. Hooper, NTM Cr.001236. 3 spms, same data as previous, coll. A.J. Bruce, NTM Cr.008776. 1♂, 4 ovig.♀, 1 juv., stn NY/10, Oxley Island, 14 m, 21 October 1982, coll. A.J. Bruce *et al.*, NTM Cr.007736. 3 spms (1 ovig.♀), stn CP/77, Orontes Bay, 10 m, 16 September 1985, coll. A.J. Bruce, on *Acropora valida*, NTM Cr.007558. 1 ovig.♀, same data as previous, NTM Cr.007633.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island, One Tree Island.

Further distribution. Type locality: Mombasa, Kenya. Also known from Sri Lanka; Maldive Islands; Moçambique Channel; Ryukyu

Islands; Misool Island, Indonesia and Madang, Papua New Guinea.

Dasella ansoni Bruce

Dasella ansoni Bruce, 1983b: 22-28, figs 1-5; 1990b: 10.

Material examined. 1 ovig.♀ holotype, 1♂ allotype, 1 bopyridized ♀, stn HL81-22, Arafura Sea, 10°58'S 132°10'E, 27 m, FV *Anson*, trawl, 19 October 1981, coll. A.J. Bruce, in an ascidian, NTM Cr.000104.

Remarks. This species is still known only from the type specimens, which were collected during the Cobourg Peninsula survey, from a locality to the NW of Orontes Reef. The position of the type locality was incorrectly given in the original description and is as given above. The specimens were found in association with the tunicate *Phallusia depressiuscula* (Heller). There have been no further collections of this species.

Australian distribution. Type locality: Arafura Sea, 10°58'S 132°10'E.

Further distribution. Not yet reported from extra-Australian waters.

Hamodactylus boschmai Holthuis

Hamodactylus boschmai Holthuis, 1952: 209-212, figs 102-104; - Bruce 1988b: 227.

Material examined. 1 ovig.♀, stn CP/28, Sandy Island No. 2, 6-7 m, 22 October 1981, coll. J.R. Hanley, NTM Cr.000162.

Australian distribution. Northern Territory: East Point, Darwin (Bruce 1983a, 1988b). Queensland: Heron Island.

Further distribution. Type localities: Ternate, Aru Islands, Indonesia. Also known from Zanzibar; Kenya; Madagascar; Singapore; Hong Kong and New Caledonia.

Hamodactylus noumeae Bruce

Hamodactylus noumeae Bruce, 1970b: 539-541, fig. 2.

Material examined. 8 spms, stn CP/20, Walford Point, Coral Bay, LWS, 17 October 1981, coll. A.J. Bruce, on gorgonian *Rumphella aggregata*, NTM Cr.001942. 1♂, stn NY/2, New Year Island, 10 m, 14 October 1982, coll. A.J. Bruce, NTM Cr.009298. 5 spms, stn NY/5, McCluer Island, 1 m, 16 October 1982, coll. A.J. Bruce, P. Horner, NTM Cr.009328. 4 spms, same data as previous, NTM Cr.009329. 1♂, 1 ovig.♀, stn NY/8, Oxley Island, LWS, 19 October 1982, coll. A.J. Bruce, NTM Cr.005630. 1 spm., same data as previous, on unidentified gorgonian, NTM Cr.006360. 5 spms, stn CP/62, Walford Point, Coral Bay, 4 m, 17 May 1983, coll. N.L. Bruce, J.R. Hanley, on gorgonian *Junceella*, NTM Cr.010523.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island, Lizard Island.

Further distribution. Type locality: Nouméa, New Caledonia. Also known from Zanzibar, Tanganyika; Kenya; Ternate, Indonesia and Okinawa, Ryukyu Islands.

Hamopontonia corallicola Bruce

Hamopontonia corallicola Bruce, 1970a: 41-48, figs 1-4; 1987a: 166; 1988b: 227.

Material examined. 1 spm., stn CP/21, Coral Bay, 1-3 m, 18 October 1981, coll. P.N. Alderslade *et al.*, NTM Cr.001882. 1 spm., stn CP/37, Table Head, 1-3 m, 3 May 1982, coll. A.J. Bruce, NTM Cr.000302. 2 ovig.♀, same data as previous, on coral *Pocillopora* sp., coll. H.K. Larson, NTM Cr.002939. 1♂, stn CP/44, Table Head, 4-5 m, 11 May 1983, coll. N.L. Bruce, NTM Cr.009348. 1 juv., stn CP/60, Coral Bay, < 6 m, 16 May 1983, coll. N.L. Bruce, NTM Cr.009281. 1 ovig.♀, stn CP/64, Walford Point, Coral Bay, 3-4 m, 18 May 1983, coll. N.L. Bruce, on coral *Heliofungia actiniformis*, NTM Cr.000448. 1 spm., stn CP/71, Coral Bay, 2-5 m, 13 September 1985, coll. A.J. Bruce, on *Heliofungia actiniformis*, NTM Cr.003225. 1♂, stn CP/75, Coral Bay, *ca.* 5 m, 15 September 1985, coll. J.E.N. Veron, R. Williams, NTM Cr.007567. 8 spms (1 ovig.♀), same data as previous, on coral *Euphyllia* sp., NTM Cr.007637. 1 spm., stn CP/82, Coral Bay, 5-6 m, 18 September 1985, coll. R. Williams, P.N. Alderslade, on *Heliofungia actiniformis*, NTM Cr.007580. 1 ovig.♀, same data as previous, NTM Cr.007574. 1♂, 1 ovig.♀, stn CP/97, Coral Bay, 12 August 1986, coll. C. Johnson, on *Heliofungia actiniformis*, NTM Cr.004167.

Australian distribution. Northern Territory: Port Essington (Bruce 1987a); East Point, Darwin (Bruce 1988b). Queensland: Heron Island, Peloris Island.

Further distribution. Type locality: Kat O Chau, Hong Kong. Also known from SE Honshu; Kushimoto, Japan; Ryukyu Islands, Japan and Banda Nura Island, Indonesia; (also Kei Islands?).

Hamopontonia essingtoni Bruce

Hamopontonia essingtoni Bruce, 1987a: 158-166, figs 1c, 11-14, 15 d-g; 1990b: 11.

Material examined. 1 spm., stn CP/70, Coral Bay, 2-5 m, 12 September 1985, coll. P.N. Alderslade, C. Hood, on coral *Stylophora* sp., NTM Cr.007554. 1 spm., same data as previous, on coral *Stylophora pistillata*, NTM Cr.007621. 1 ovig.♀ holotype, 1♂ allotype, stn CP/71, Coral Bay, 2-5 m, 13 September 1985, coll. L. Vail, on *Stylophora pistillata*, NTM Cr.004072. 16 spms (3 ovig.♀), same data as previous, coll. A.J. Bruce, NTM Cr.007568. 1♂, same data as previous, coll. A.J. Bruce, on *Stylophora pistillata*, NTM Cr.007628. 12 spms (6 ovig.♀) paratypes, stn CP/76, Coral Bay, 6 m, 15 September 1985, coll. L. Vail, on *Stylophora pistillata*, NTM Cr.004073 A and B. 1 spm., stn CP/82, Coral Bay, 5-6 m, 18 September 1985, coll. P.N. Alderslade, R. Williams, on *Stylophora* sp., NTM Cr.007608.

Australian distribution. Type locality: Coral Bay, Port Essington (Bruce 1987a). No further records.

Further distribution. Not known outside Australian waters.

Harpiliopsis beaupresii (Audouin)

Palaemon beaupresii Audouin, 1825: 91.

Harpilius beaupresii - Heller 1861: 27.

Harpiliopsis beaupresi - Borradaile 1917: 324, 379, pl. 55, fig. 21; - Holthuis 1952; 181-182.

Material examined. 1♂, 1 ovig.♀, stn CP/16, Trepang Bay, 2 m, 14 October 1981, coll. A.J. Bruce *et al.*, on coral *Seriatopora* sp., NTM Cr.001901. 1♀, same data as previous, on coral *Stylophora* sp., NTM Cr.008647. 1 spm., stn NY/1, New Year Island, 10 m, 13 October 1982, coll. P. Horner, on *Seriatopora* sp., NTM Cr.003175. 1 spm., same data as previous, NTM Cr.007744. 1♂, 1 ovig.♀, same data as previous, NTM Cr.007754. 1♂, 2 ovig.♀, stn NY/2, New Year Island, 10 m, 14 October 1982, coll. A.J. Bruce, NTM Cr.009291. 2 ovig.♀, 1 juv., stn NY/3, New Year Island, 16 m, 14 October 1982, coll. P. Horner *et al.*, NTM Cr.007775. 1 spm., stn NY/4, McCluer Island, 7 m, 16 October 1982, coll. A.J. Bruce, NTM Cr.009280. 1♂, same data as previous, NTM Cr.009295. 1♂, 1 ovig.♀, stn NY/5, McCluer Island, 1 m, 16 October 1982, coll. A.J. Bruce, P. Horner, NTM Cr.009320. 1 ovig.♀, same data as previous, NTM Cr.009322. 7 spms (1 ovig.♀), stn NY/9, Oxley Island, LWS, 20 October 1982, coll. A.J. Bruce, on *Seriatopora* sp., NTM Cr.003168. 1♂, 1 ovig.♀, same data as previous, NTM Cr.009294. 1♂, 1 ovig.♀, stn CP/71, Coral Bay, 2-5 m, 13 September 1985, coll. A.J. Bruce, on *Stylophora* sp., NTM Cr.007561. 1♂, 1 ovig.♀, same data as previous, NTM Cr.007565. 1♂, stn CP/75, Coral Bay, *ca.* 5 m, 15 September 1985, coll. J.E.N. Veron, R. Williams, on *Stylophora* sp., NTM Cr.007638. 2♂, 3 ovig.♀, stn CP/77, Orontes Bay, 10 m, 16 September 1985, coll. R. Williams, on *Stylophora pistillata*, NTM Cr.007555. 1 spm., same data as previous, on *Stylophora pistillata*, NTM Cr.007632. 1♂, same data as previous, on *Seriatopora hystrix*, NTM Cr.007634. 1♂, 1 ovig.♀, stn CP/82, Coral Bay, 5-6 m, 18 September 1985, coll. P.N. Alderslade, R. Williams, 5-6 m, on *Stylophora* sp., NTM Cr.007616. 1 spm., stn CP/95, Coral Bay, 12 August 1986, 5-6 m, coll. R. Williams *et al.*, NTM Cr.004155.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island.

Further distribution. Type locality: Egyptian Red Sea. Abundant throughout the Indo - West Pacific region: Red Sea; East Africa; Indian Ocean islands; Indonesia; South China Sea; Thailand; Japan; Philippines; Marshall Islands; and Hawaiian Islands, also extending to Easter Island.

Ischnopontonia lophos (Barnard)

Philarius lophos Barnard, 1962: 242-243, fig. 2.

Ischnopontonia lophos - Bruce 1966: 585-595, figs 1-5; - Bruce 1983a: 44; 1988b: 227-228.

Material examined. 1♂, 1 ovig.♀, stn NY/8, Oxley Island, LWS, 19 October 1982, coll. J. Robinson, A.J. Bruce, on coral *Galaxea fascicularis*, NTM Cr.007760. 3 spms, stn CP/75, Coral Bay, 5 m, 15 September 1985, coll. J.E.N. Veron, R. Williams *et al.*, on *Galaxea fascicularis*, NTM Cr.007639.

Australian distribution. Northern Territory: East Point, Darwin (Bruce 1983a, 1988b); Port Essington. Queensland: Heron Island, One Tree Island, Great Palm Island, Orpheus Island, Fantôme Island.

Further distribution. Type locality: Inhaca Island, Moçambique. Also known from Zanzibar; Kenya; Tanganyika; Comoro Islands; Mada-

gascar; Seychelle Islands; Malaya; Singapore; Caroline Islands; Fijian Islands and Ryukyu Islands.

Onycocaris quadratophthalma (Balss)

Pontonia quadratophthalma Balss, 1921: 15, fig. 7.

Onycocaris quadratophthalma - Holthuis 1952: 150-151; - Bruce 1993b: 330-335, figs 1-3.

Material examined. 1 ovig.♀, stn CP/37, Table Head, 1-3 m, 3 May 1982, coll. A.J. Bruce, in unidentified sponge, NTM Cr.000301.

Remarks. *Onycocaris quadratophthalma* appears to represent a complex of related species and most of the non-Australian records require detailed re-examination. Outside Australia, known with certainty only from Hong Kong.

Australian distribution. Type locality: Cape Jaubert, Western Australia. Northern Territory: not previously recorded.

Further distribution. Reported only from Eniwetak Atoll, Marshall Islands; Hong Kong; Wake Island; Pearl and Hermes Reefs; Oahu, Hawaiian Islands, and possibly also Ryukyu Islands.

Palaemonella pottsi (Borradaile)

Periclimenes (Falciger) pottsi Borradaile, 1915: 212.

Palaemonella pottsi - Kemp 1922: 126-127; - Bruce 1988b: 228.

Material examined. 1♂, 1 ovig.♀, stn CP/26, Sandy Island No 2, 7 m, 20 October 1981, coll. P.N. Alderslade, J.N.A. Hooper, on unidentified crinoid, NTM Cr.010108. 1 spm., stn NY/1, New Year Island, 10 m, 13 October 1982, coll. P. Horner, on unidentified crinoid, NTM Cr.007751. 1♂, stn NY/4, McCluer Island, 7 m, 16 October 1982, coll. A.J. Bruce, NTM Cr.009288. 1 spm., stn CP/62, Coral Bay, 4 m, 17 May 1983, coll. N.L. Bruce, J.R. Hanley, on crinoid *Comanthina schlegelii*, NTM Cr.000446. 1♂, 1 ovig.♀, stn CP/76, Coral Bay, 6 m, 15 September 1985, coll. L. Vail, J.E.N. Veron, R. Williams, on crinoid *Stephanometra oxyacantha*, NTM Cr.007625. 1♀, stn CP/80, Orontes Bay, 10 m, 17 September 1985, coll. J.E.N. Veron, R. Williams, on crinoid *Comanthus briareus*, NTM Cr.007627. 2 spms, stn CP/85, Orontes Reef, 10-15 m, 19 September 1985, coll. C Hood, L. Vail, R. Williams, on unidentified crinoid, NTM Cr.007614.

Remarks. *Palaemonella pottsi* is known to associate with a wide variety of crinoid hosts, but has not been previously reported in association with the genus *Stephanometra*.

Australian distribution. Type locality: Mabuaig, Torres Strait, Queensland. Northern Territory: East Point, Darwin (Bruce 1988b). Queensland: One Tree Island, Heron Island, Capricorn Islands.

Further distribution. Zanzibar; Singapore; Indonesia; Japan; New Caledonia; Philippines; and Marshall Islands.

Palaemonella rotumana (Borradaile)

Periclimenes rotumanus Borradaile, 1898: 383.

Palaemonella vestigialis Kemp 1922: 123-126, figs 1-2, pl. 3, fig. 2.

Palaemonella rotumana - Bruce 1970c: 276-279: pl. 1 e-f; 1983a: 42; 1988b: 228.

Material examined. 1♂, stn CP/2, Kennedy Bay, 2 m, 22 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on unidentified sponge, NTM Cr.008542. 1♂, same data as previous, on coral *Acropora* sp., NTM Cr.008546. 2 spms (1 ovig.♀), same data as previous, on *Acropora* sp., NTM Cr.008557. 2♀, stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on *Acropora* sp., NTM Cr.008532. 1♀, same data as previous, NTM Cr.008533. 1 ovig.♀, same data as previous, NTM Cr.008534. 1 spm., stn CP/8, Coral Bay, 2-3 m, 24 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on *Acropora* sp., NTM, Cr.008545. 1 spm., stn CP/10, Black Point, 1-2 m, 18 July 1981, coll. A.J. Bruce, J.N.A. Hooper, on brown algae *Padina* sp., NTM Cr.007653. 1♀, same data as previous, on coral *Turbinaria* sp., NTM Cr.007656. 1♂, same data as previous, on *Padina* sp., NTM Cr.007657. 1♂, same data as previous, in rubble, NTM Cr.007658. 1♂, 1 ovig.♀, same data as previous, on *Turbinaria* sp., NTM Cr.007661. 2 spms, stn CP/14, Burford Island, LWS, 13 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.003192. 1♂, 1 ovig.♀, stn CP/16, Trepang Bay, 2 m, 14 October 1981, coll. A.J. Bruce *et al.*, on coral *Stylophora* sp., NTM Cr.008646. 1 ovig.♀, 2 juv., stn CP/17, Wanaray Point, Trepang Bay, LWS, 15 October 1981, coll. A.J. Bruce, P. Horner, NTM Cr.008711. 1♀ juv., stn CP/30, Black Point, 10-12 m, 29 April 1982, coll. P. Horner, H.K. Larson, NTM Cr.009326. 1♂, stn CP/34, Danger Point, Port Bremer, 2 m, 1 May 1982, coll. J.R. Hanley, R. Williams, NTM Cr.009332. 1♂, 1♀, stn CP/36, Sandy Island No 2, 13 m, 2 May 1982, coll. J.N.A. Hooper *et al.*, NTM Cr.009333.

2 spms, stn CP/38, Table Head, 2-4 m, 4 May 1982, coll. H.K. Larson *et al.*, NTM Cr.001966. 1♂, stn NY/2, New Year Island, 10 m, 14 October 1982, coll. A.J. Bruce, NTM Cr.009315. 1♂, 1 ovig.♀, stn NY/3, New Year Island, 16 m, 14 October 1982, coll. P. Horner *et al.*, NTM Cr.007776. 2 ovig.♀, stn NY/8, Oxley Island, 19 October 1982, coll. J. Robinson, A.J. Bruce, NTM Cr.007758. 1 spm., same data as previous, NTM Cr.007767. 1 ovig.♀, stn CP/46, off Table Head, 5 m, 12 May 1983, coll. N.L. Bruce, NTM Cr.009356. 1 spm., stn CP/51, Table Head, 4 m, 13 May 1983, coll. N.L. Bruce, on *Acropora* sp., NTM Cr.010481. 1 spm., stn CP/62, Coral Bay, 4 m, 17 May 1983, coll. J.N.A. Hooper, on unidentified sponge, NTM Cr.000441. 3 spms (1 ovig.♀), stn CP/64, Coral Bay, 3-4 m, 18 May 1983, coll. N.L. Bruce, on *Acropora* sp., NTM Cr.009279. 1 ovig.♀, same data as previous, NTM Cr.010524. 2♂, 1♀, stn CP/65, Middle Bay, Coral Bay, 0.5 m, 18 May 1983, coll. A.J. Bruce, NTM Cr.009276. 1 spm., stn CP/75, Coral Bay, *ca.* 5 m, 15 September 1985, coll. J.E.N. Veron, R. Williams, on *Acropora* sp., NTM Cr.007605. 1 spm., same data as previous, on coral *Galaxea fascicularis*, NTM Cr.007636. 1♂, stn CP/82, Coral Bay, 5-6 m, 18 September 1985, coll. P.N. Alderslade, R. Williams, on *Acropora* sp., NTM Cr.007578. 1♂, same data as previous, on *Acropora digitifera*, NTM Cr.007611. 1 spm., same data as previous, on *Stylophora* sp., NTM Cr.007617. 1♂, 1 ovig.♀, stn CPV/8, Barrow Bay, LWS, 18 September 1985, coll. J.R. Hanley *et al.*, mangrove mudflats, NTM Cr.007648. 2 ovig.♀, same data as previous, NTM Cr.007649.

Australian distribution. Northern Territory: East Point, Weed Reef, Darwin Harbour (Bruce 1983a, 1988b). Queensland: Low Isles, Moreton Bay, Heron Island, One Tree Island, North East Cay, Herald Islands.

Further distribution. Type locality: Rotuma Island. Common throughout most of the Indo-West Pacific region, including Red Sea and East Africa to Ryukyu and Hawaiian Islands, spreading via the Suez Canal into eastern Mediterranean Sea, but not reported from Eastern Pacific region.

Palaemonella spinulata Yokoya

Palaemonella spinulata Yokoya, 1936: 135, fig. 4.

Material examined. 1 spm., stn CP/30, Black Point, 10-12 m, 29 April 1982, coll. P. Horner, H.K. Larson, NTM Cr.000297. 1 ovig.♀, stn CP/85, Orontes Reef, 10-15 m, 19 September 1985, coll. C. Hood *et al.*, NTM Cr.004056.

Australian distribution. Northern Territory: not previously recorded. Queensland: Moreton Bay, Heron Island.

Further distribution. Type locality: Misaki, Japan. Otherwise known only from Kenya, Tanganyika and La Réunion.

Periclimenaeus arabicus (Calman)

Periclimenes (Periclimenaeus) arabicus Calman, 1939: 210-211, fig. 4.

Periclimenaeus arabicus - Holthuis 1952: 130.

Periclimenaeus ohshimae Miyake and Fujino 1967: 275-279, fig. 1.

Material examined. 2 ovig.♀, stn CP/44, Table Head, 4-5 m, 11 May 1983, coll. N.L. Bruce, in sponge *Callyspongia diffusa*, NTM Cr.009409.

Australian distribution. Northern Territory, not previously recorded. Queensland: Heron Island, Capricorn Islands.

Further distribution. Type locality: Oman, 19°22.6'N 57°53.0'E. Also known from Jibouti; Kenya; Zanzibar; Tanganyika; Maldive Islands; Hong Kong; Vietnam; Japan; New Caledonia and Fijian Islands.

Periclimenaeus orontes Bruce

Periclimenaeus orontes Bruce, 1987a: 151-158, figs 1b, 6-10; 1990b: 11.

Material examined. 1 ovig.♀, holotype, stn CP/40, Orontes Reef, 3 m, 5 May 1982, coll. A.J. Bruce, in sponge *Jaspis stellifera*, NTM Cr.000272.

Australian distribution. Type locality: Orontes Reef, Cobourg Peninsula, Northern Territory. No other records.

Further distribution. Not known outside Australian waters.

Periclimenaeus serrula sp. nov.
(Figs 3-5)

Type material. 1 ovig.♀, holotype, 1♂ allotype, stn CP/99, Orontes Reef, 11°4.5'S 132°4.8'E, 11-12 m, SCUBA, 13 August 1986, coll. A. Hoggett *et al.*, in tunicate *Leptoclinoides incertus*, NTM Cr.004174 A (holotype) & B (allotype).

Diagnosis. Medium sized shrimp for the genus, female of swollen form, male slender.

Rostrum (Fig. 3c) well developed, reaching to about end of proximal segment of antennular peduncle, slender, upturned, dorsal carina obso-

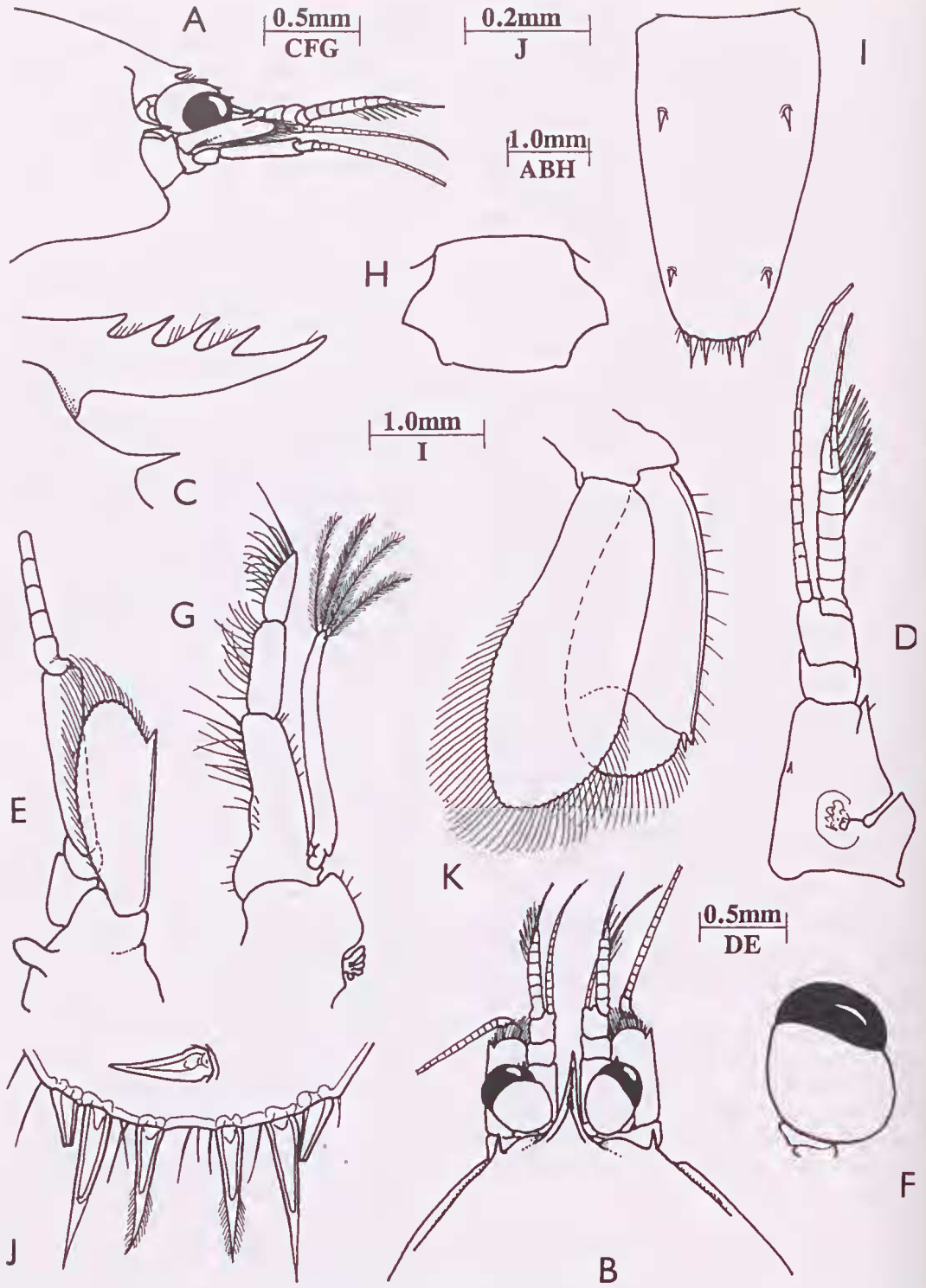

Fig. 3. *Periclimenaeus serrula* sp. nov., ovigerous female holotype, Orontes Reef. **A**, anterior carapace, antennae lateral; **B**, same dorsal; **C**, rostrum; **D**, antennule; **E**, antenna; **F**, eye, dorsal; **G**, third maxilliped; **H**, sixth abdominal segment, dorsal; **I**, telson; **J**, same posterior margin; **K**, uropod.

lete, with four dorsal teeth, first stout, well in advance of orbital margin, others slender, distal third without teeth, ventral border convex, unarmed, non-setose. Carapace (Fig. 3a, b) smooth, without supraorbital spines or tubercles; inferior orbital angle broad, convex; antennal spine well developed, slender, acute, anteroventral angle of branchiostegite bluntly produced. Abdomen with first segment without dorsal lobe, sixth segment (Fig. 3h) about 1.5 times broader than long, posterolateral angles small, blunt. Telson (Fig. 3i) 1.8 times longer than anterior width, lateral margins feebly convex, convergent, dorsal spines small, at 0.3 and 0.77 of telson length,

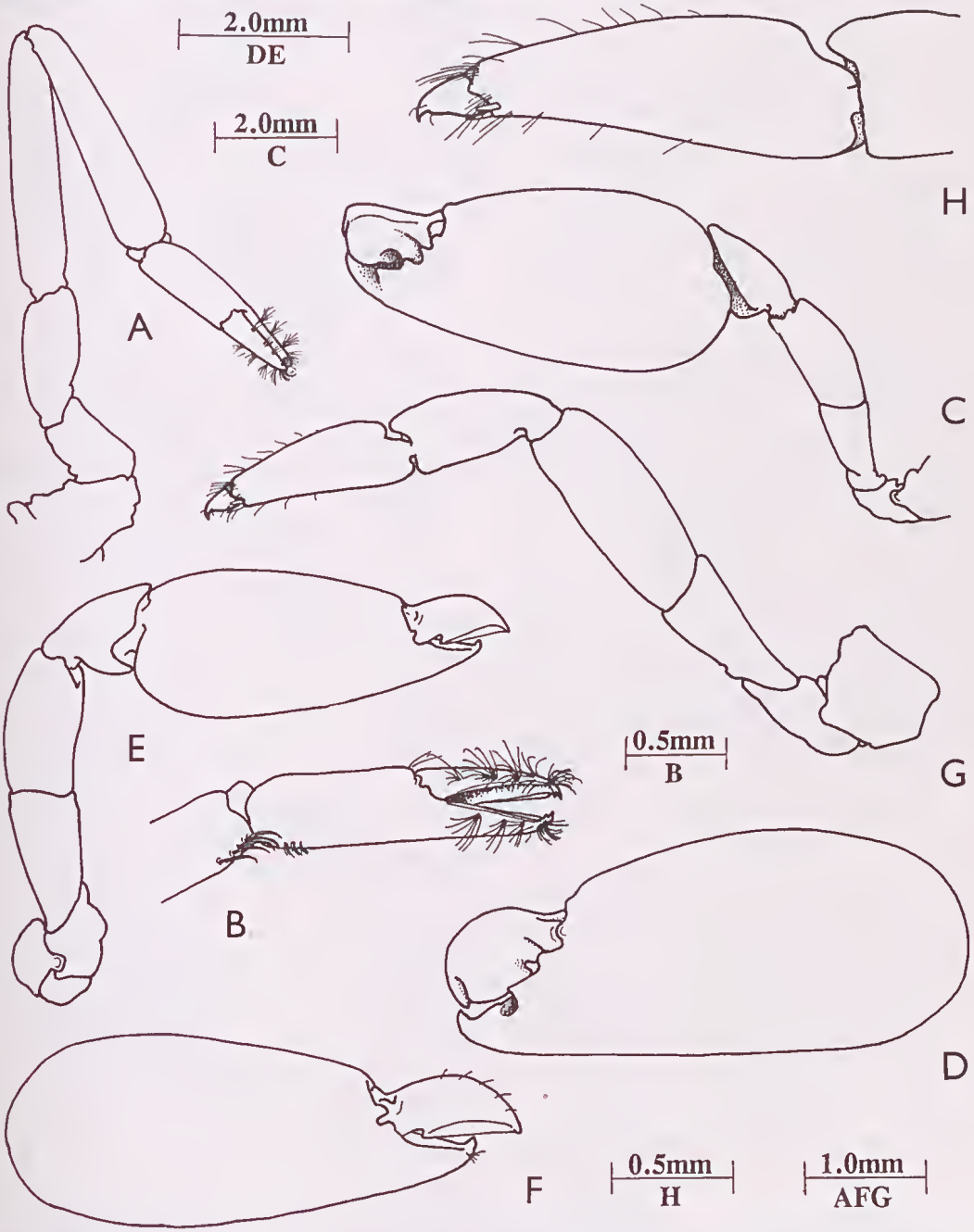

Fig. 4. *Periclimenaeus serrula* sp. nov., ovigerous female holotype. **A**, first pereiopod; **B**, same, chela; **C**, major second pereiopod; **D**, same, chela; **E**, minor second pereiopod; **F**, same, chela; **G**, third pereiopod; **H**, same, dactyl, propod, distal carpus.

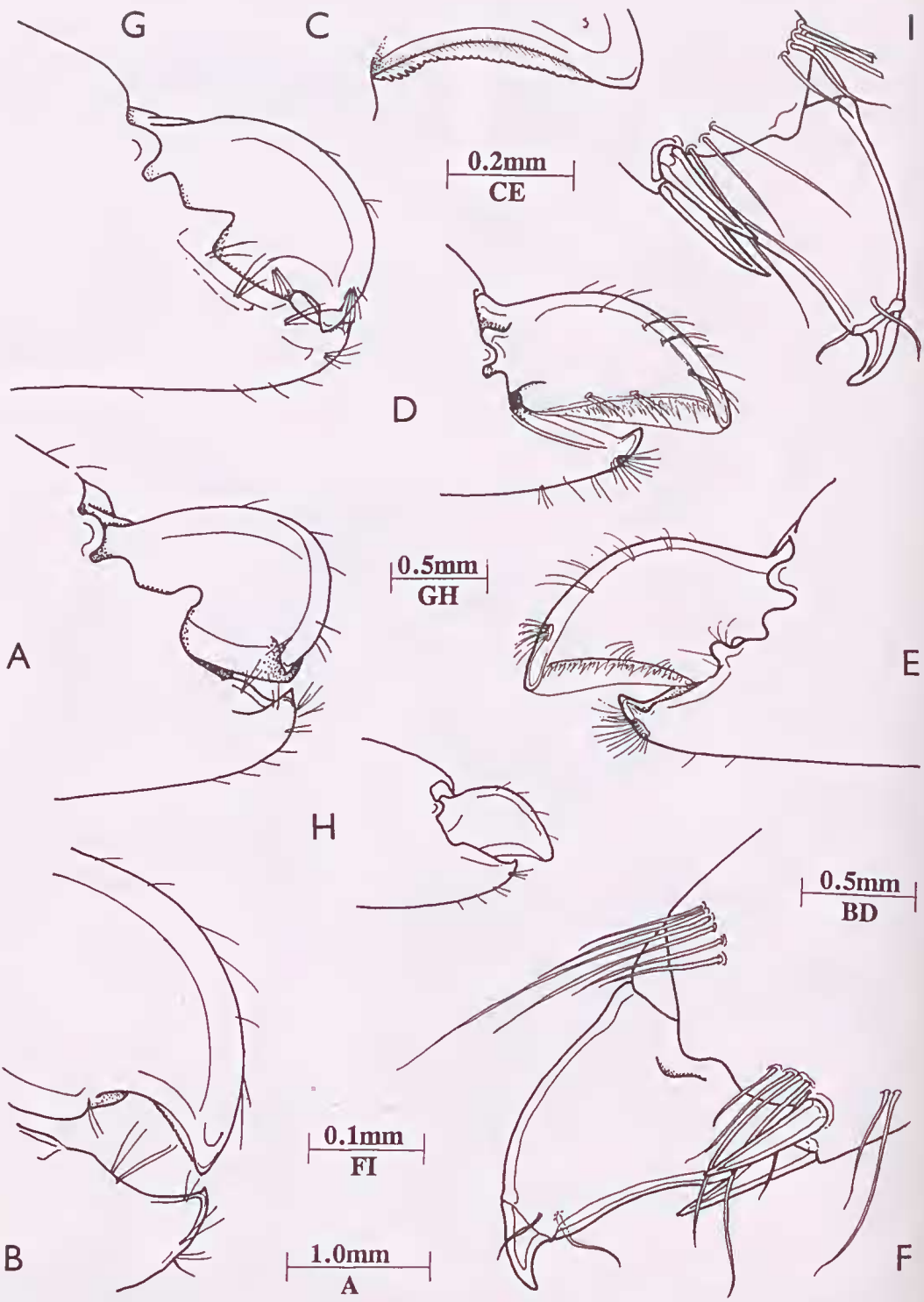

Fig. 5. *Periclimenaeus serrula* sp. nov., ovigerous female holotype. **A**, major second pereiopod, fingers; **B**, same, tips of fingers; **C**, cutting edge of dactyl; **D**, minor second pereiopod, fingers, medial; **E**, same lateral; **F**, third pereiopod, dactyl. Male allotype; **G**, major second pereiopod, fingers; **H**, minor second pereiopod, fingers; **I**, third pereiopod, dactyl.

anterior spines about 0.07 of telson length, posterior spines slightly smaller, posterior margin (Fig. 3j) broadly convex, about 0.4 of anterior width, lateral spines slightly smaller than posterior dorsal spines, intermediate spines about 0.1 of telson length, slender, acute, submedian spines similar, shorter, setulose.

Proximal segment of antennular peduncle (Fig. 3d) with distolateral angle feebly produced, with small acute tooth; stylocerite short, broad, distally acute. Antenna (Fig. 3e) with basicerite lacking dorsal lobe; scaphocerite reaching to about middle of distal segment of antennular peduncle, 2.6 times longer than broad, lamina broadly rounded distally, far exceeding small acute distolateral tooth. Eyes (Fig. 3f) with small oblique hemispherical cornea.

Third maxilliped (Fig. 3g) with ischiomerus and basis fused, with small functional arthrobranch.

First pereiopod (Fig. 4a) moderately slender, exceeding antennular peduncle by distal third of merus; chela (Fig. 4b) with palm subcylindrical, 2.4 times longer than deep, fingers about 0.8 of palm length, slender, spatulate, with bidentate tips, cutting edges entire, dactylus without dorsal setal tuft, carpus about 1.4 times chela length, subequal to merus.

Second pereiopods (Figs 4c, e) grossly unequal, dissimilar. Major chela (Fig. 4d) 1.6 times carapace length, 1.75 times minor chela length, palm swollen, 1.8 times longer than deep, smooth; dactyl (Fig. 5a) about 0.3 of palm length, compressed, with large molar process, tip acute (Fig. 5b), cutting edge (Fig. 5c) laminar, minutely serrate; fixed finger with large fossa proximally, with blunt tooth dorsally, cutting edge blunt, entire, tip acute; merus without spines or tubercles ventrally. Minor chela (Fig. 4f) about 1.75 of major chela length, subequal to carapace length, palm about 2.0 times longer than deep, feebly tapering distally, glabrous, dactyl (Fig. 5d) about 0.37 of palm length, 2.4 times longer than deep, dorsal margin broadly convex, cutting edge sublinear, sharply carinate, unarmed, tip blunt; fixed finger short, about 0.25 of palm length, slightly exceeding half dactyl length, deeply cannulate, tip strongly hooked, acute; merus ventrally smooth.

Ambulatory pereiopods robust. Third pereiopod (Fig. 4g) with propod (Fig. 4h) stout, about 3.0 times longer than deep, tapering strongly distally, with two stout distoventral spines; dactyl (Fig. 5f) small, compressed, about 1.5 times longer than deep, 0.2 of propod length, unguis distinct, about 0.3 of dorsal corpus length, corpus simple, without accessory teeth.

Uropod (Fig. 3k) with exopod laterally entire, feebly setose, with small acute distolateral tooth with mobile spine medially.

Remarks. Ova small about 0.5mm length. The male is generally similar to female, rostral dentition 4/0, body form slender, major chela (Fig. 5g) about 1.95 times carapace length, minor chela (Figs 5d, e) 0.9 times carapace length, 0.46 of major chela length, ambulatory dactyls similar to female, simple.

Etymology. From *serra* (latin), a saw, diminutive, with reference to the cutting edge of the dactyl of the major second pereiopod.

Host. *Leptoclinoides incertus* Sluiter (Urochordata) (det. P. Mather, 20 August 1986).

Measurements. Ovigerous female, CL 4.5 mm; male, CL 2.5 mm.

Systematic position. *Periclimenaeus serrula* is most closely related to *P. crassipes* (Calman, 1939) and *P. hecate* (Nobili, 1904). Both these species have simple unarmed dactyls on the ambulatory pereiopods, lacking accessory teeth or denticulations. *P. serrula* may be distinguished from both these species by the presence of an entire cutting edge on the dactyl of the minor second pereiopod, and a minutely denticulate distal cutting edge on the dactyl of the major second pereiopod. The only other Indo-West Pacific species with simple dactyls on the ambulatory pereiopods are *P. arthrodactylus* Holthuis, in which very large supraorbital teeth are present, and *P. trispinosus* Bruce, which has several post-antennal spines.

Periclimenaeus solitus sp. nov.
(Figs 6-7)

Type material. 1♂ holotype, stn CP/40, Orontes Reef, 11°03.6'S 132°05.0'E, 3 m, 5 May 1982, coll. A.J. Bruce, in sponge *Jaspis stellifera*, NTM Cr.000277.

Diagnosis. Small sized shrimp for the genus, of slender subcylindrical body form.

Rostrum (Fig. 6c) well developed, slender, acute, reaching to about distal end of proximal segment of antennular peduncle, horizontal, lateral carinae obsolete, dorsal carina with three acute teeth on distal half, ventral margin unarmed, sinuous.

Carapace (Figs 6a, b) without supraorbital spines or tubercles, with well marked postorbital

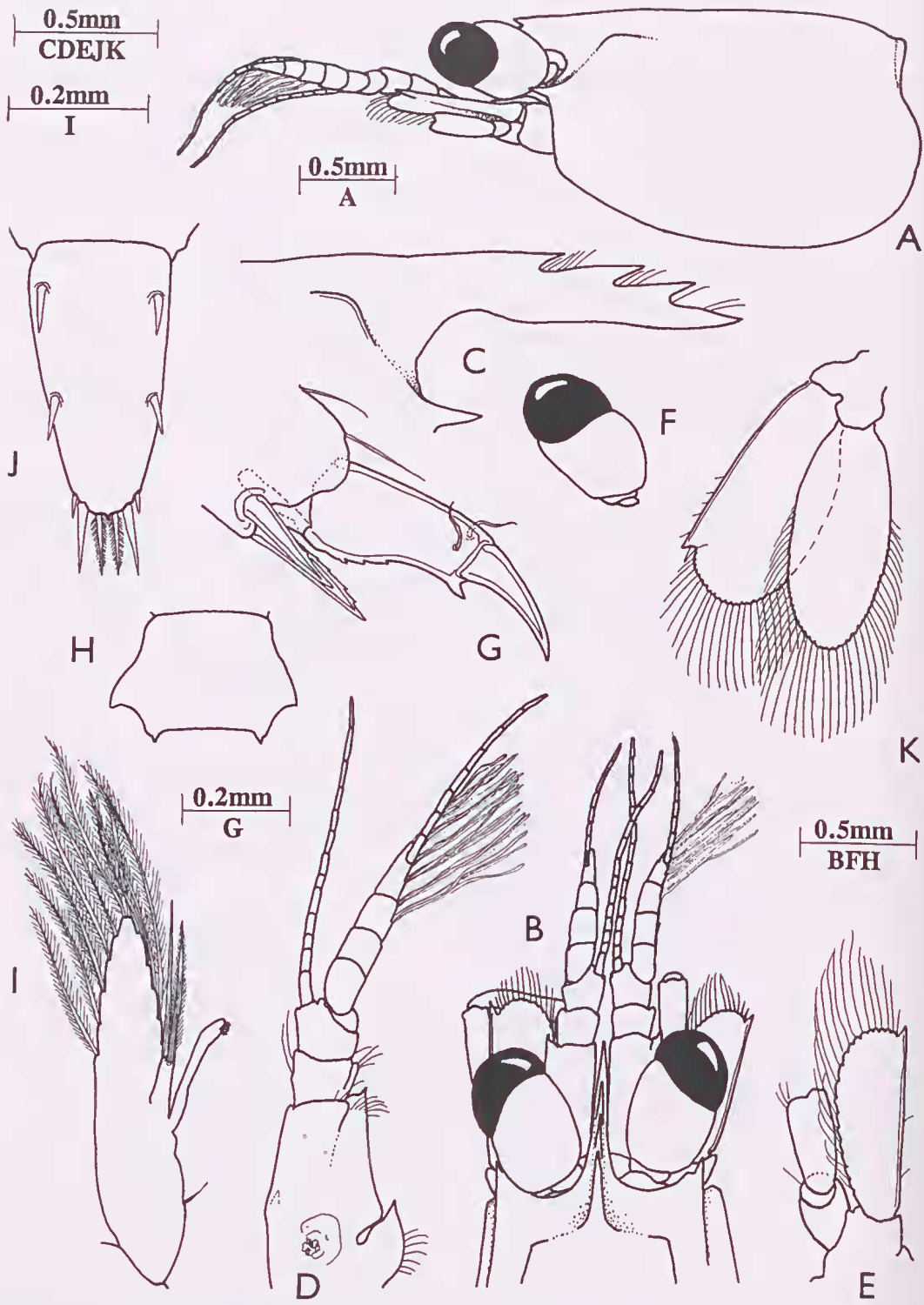

Fig. 6. *Periclimenaeus solitus* sp. nov., holotype male, Orontes Reef. **A**, carapace, eye and antennae, lateral; **B**, anterior carapace, eyes, antennal peduncles, dorsal; **C**, rostrum and orbital region, lateral; **D**, antennule; **E**, antenna; **F**, eye, right, dorsal; **G**, third pereiopod, distal propod and dactyl; **H**, sixth abdominal segment dorsal; **I**, male second pleopod, endopod; **J**, telson; **K**, uropod.

shoulder; antennal spine slender, acute, inferior orbital angle small, anterolateral angle of branchiostegite not produced, bluntly obtuse. Abdomen with first segment lacking anterior dorsal lobe; sixth segment (Fig. 6h) about 1.6 times broader than long, posterolateral angles small, acute. Telson (Fig. 6j) about twice as long as anterior width, lateral margins feebly convex, convergent, dorsal spines about 0.17 of telson length, at 0.18 and 0.58 of telson length, subequal, anterior pair submarginal, posterior pair marginal, posterior margin broadly convex, about

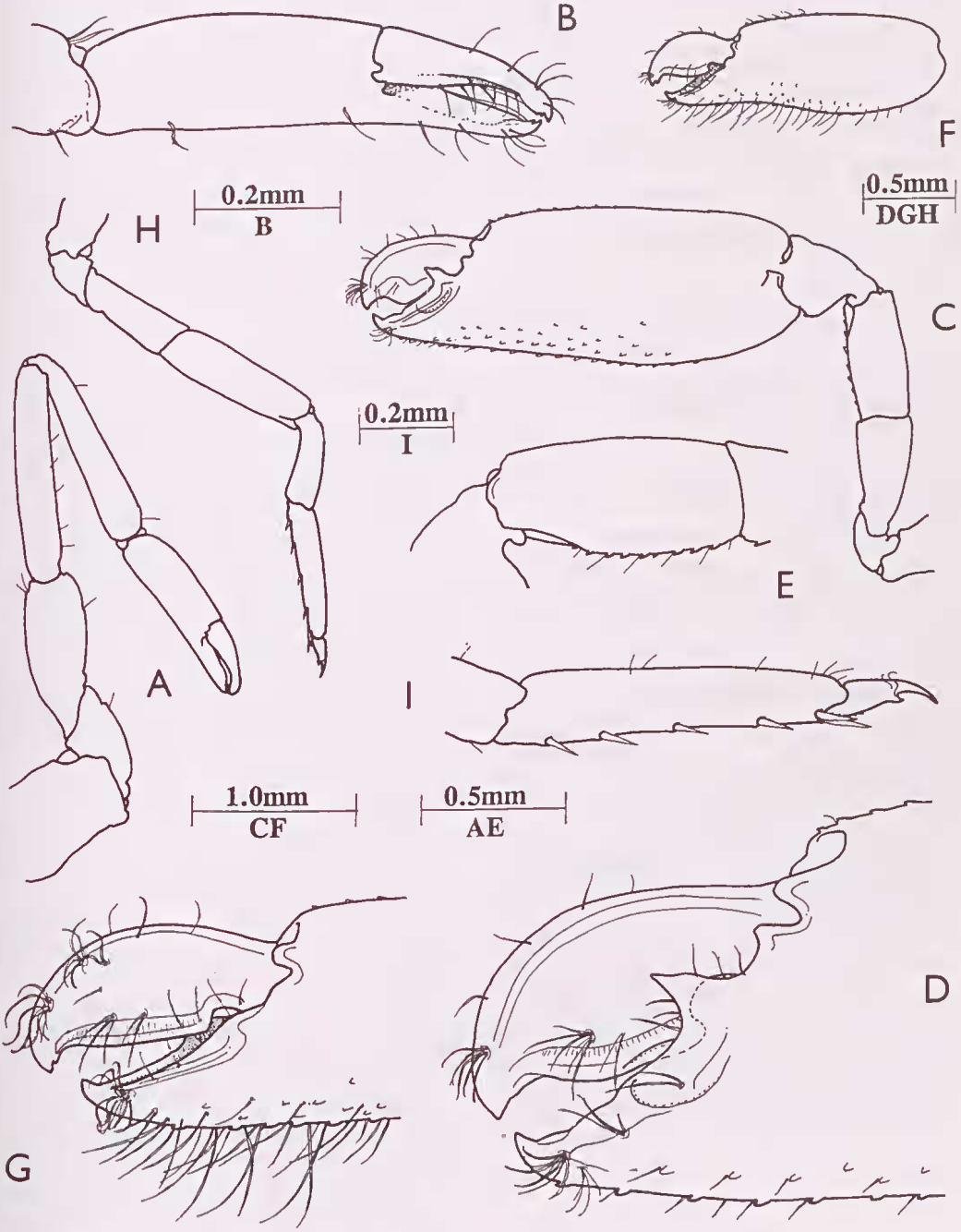

Fig. 7. *Periclimenaeus solitus* sp. nov., holotype male. **A**, first pereiopod; **B**, same, chela; **C**, major second pereiopod; **D**, same, finger; **E**, same, merus; **F**, minor second pereiopod, chela; **G**, same, fingers; **H**, third pereiopod; **I**, same, propod and dactyl.

0.5 of anterior margin width, with minute acute median point, lateral spines about 0.6 of dorsal spine length, intermediate spines 0.25 of telson length, slender, very acute, submedian spines 0.9 of intermediate spine length, much more slender, setulose.

Proximal segment of antennular peduncle (Fig. 6d) with distolateral margin produced, with small acute lateral tooth; stylocerite short, broad, acute. Antenna (Fig. 6e) with basicerite lacking dorsal lobe; scaphocerite exceeding intermediate segment of antennular peduncle, about 2.7 times longer than broad, with small acute distolateral tooth distinctly exceeding lamella; carpocerite short, reaching to about 0.6 of scaphocerite length. Eyes (Fig. 6f) well developed, with large oblique hemispherical cornea.

First pereiopod (Fig. 7a) moderately slender, distal merus reaching almost to end of antennular peduncle; chela (Fig. 7b) with palm subcylindrical, slightly swollen, 2.5 times longer than deep, fingers about 0.6 of palm length, broadly subspatulae, lateral cutting edges entire, tips expanded, bidentate, dactyl without dorsal setal tuft; carpus about 1.2 times palm length, subequal to merus.

Second pereiopods grossly unequal, dissimilar. Major chela (Fig. 7c) about 1.5 times carapace length, 1.5 times minor chela length, palm subcylindrical, about 2.0 times longer than deep, feebly tapered distally, compressed, dorsal surface acutely tuberculate, sparsely setose; dactyl (Fig. 7d) about 0.37 of palm length, compressed, twice as long as deep, with broad acute tip, cutting edge with long, low molar process proximally, distal cutting edge entire; fixed finger (Fig. 7d) with large fossa proximally, with large acute tooth dorsally; ventral border of merus strongly tuberculate (Fig. 7e), ischium feebly tuberculate. Minor chela (Fig. 7f) about 0.7 of major chela length, palm about 2.1 times longer than broad, strongly compressed, acutely tuberculate, with numerous long setae, especially ventrally; dactyl (Fig. 7g) about 0.45 of palm length, 2.4 times longer than deep, with hooked bidentate tip, dorsal margin strongly convex, cutting edge very feebly convex, entire; fixed finger (Fig. 7g) about 0.3 of palm length, distinctly exceeded by dactyl, tip feebly acute, hooked, cutting edge deeply cannulate; merus feebly tuberculate ventrally.

Ambulatory pereiopods slender. Third pereiopod (Fig. 7h) with propod (Fig. 7i) about 4.3 times longer than proximal depth, feebly tapering distally, with four robust ventral spines, two distoventral spines, medial spine longer than lateral spine; feebly denticulate dorsally; dactyl (Fig. 6g) about 0.28 of propod length, slender, compressed, 3.0 times longer than deep, unguis large, robust, curved, unarmed, about 0.8 of corpus length, corpus with strong, acute, distally directed, distal accessory tooth, ventral border with three minute denticles.

Male second pleopod (Fig. 6i) with appendix masculina with short corpus, with two long distal spines, 3.0 times corpus length, medial spine setulose, lateral spine non-setulose.

Uropod (Fig. 6k) with exopod laterally entire, sparsely setose, with small acute distal tooth with mobile spine medially.

Host. *Jaspis stellifera* (Carter) (Jaspidae: Porifera).

Etymology. From *solitus*, latin, usual.

Measurement. Holotype male, CL 1.8mm.

Systematic position. *Periclimenaeus solitus* is most closely related to *Periclimenaeus spongicola* Holthuis, 1952. Features shared with *P. spongicola* are: (i) third pereiopod dactyl biunguiculate, not elongate, *ca.* 0.33 of propod length, corpus with ventral denticulations; unguis without ventral denticulations; (ii) exopod of uropod laterally entire; (iii) dorsal margin of first abdominal segment without anterior lobe; (iv) dorsal telson spines not restricted to anterior half of telson; (v) dactyl of major second pereiopod not subrectangular, (vii) first pereiopod fingers greater than 0.5 of palm length; (viii) supraorbital spines absent, (iv) scaphocerite much exceeding carpocerite.

Periclimenaeus solitus may be distinguished from *P. spongicola* by the following features:

(i) three instead of six dorsal rostral teeth; rostrum straight, not up-curved; (ii) carpocerite short, not exceeding scaphocerite; (iii) scaphocerite with lamella not markedly exceeding distolateral spine; (iv) second pereiopod with palms of chelae acutely tuberculate, not smooth; merus ventrally tuberculate, not smooth; (v) dactyl of minor second pereiopod with cutting edge entire, not dentate; (vi) third pereiopod with propod slender, with strong ventral spines, not swollen, with distoventral spines only; (vii) third pereiopod dactyl slender, with anteroverted distal accessory spine, not stout, with recurved accessory spine; (viii) second pereiopods with chelae tuberculate not smooth; merus ventrally tuberculate, not smooth.

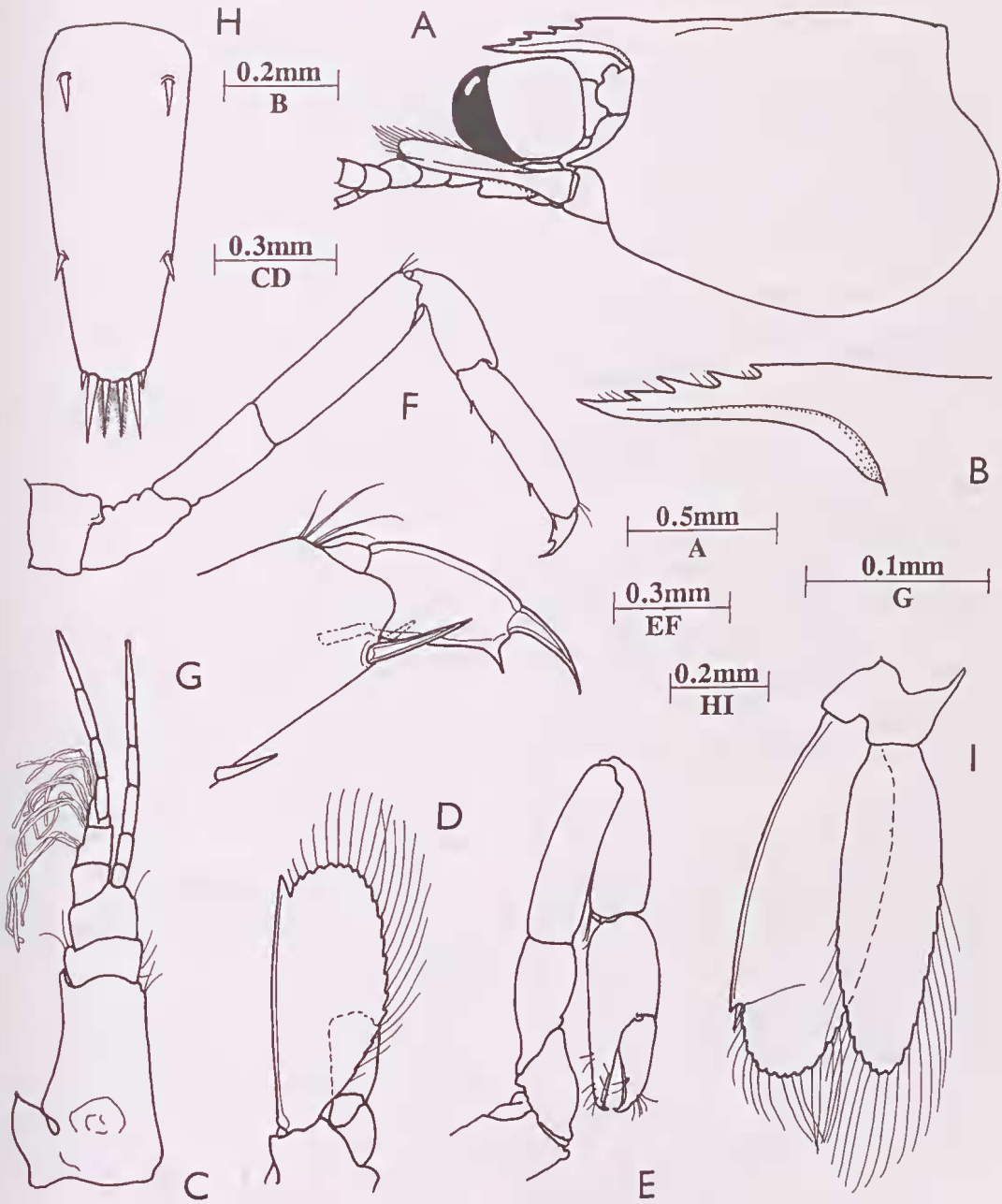

Fig. 8. *Periclimeneaeus stylirostris* Bruce, post-larva. **A**, carapace and rostrum; **B**, rostrum; **C**, antennule; **D**, antenna; **E**, first pereiopod; **F**, third pereiopod; **G**, same, distal propod and dactyl; **H**, telson; **I**, uropod.

Remarks. The holotype of *Periclimenaeus orontes* was also obtained from a specimen of the same host sponge, *Jaspis stellifera*, also from Orontes Reef (Bruce 1987b). This species may be readily distinguished by the presence of six dorsal rostral teeth, with an anterior dorsal lobe in the first abdominal tergite, and with the two pairs of dorsal telson spines, both on the anterior half of the telson. *Jaspis stellifera* is also host for other pontoniine shrimps: *Orthopontonia ornatus* (Bruce, 1970d) and *Periclimenaeus bidentatus* Bruce, 1970d.

Periclimenaeus stylirostris Bruce
(Figs 8-9)

Periclimenaeus stylirostris Bruce, 1969: 167-168; 1972: 68-75, figs 2-6.

Periclimenaeus sp. Lowry and Springthorpe 1992: 129.

Material examined. Post-larva, stn CP/18, Trepang Bay, LWS, 16 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.007667. Carapace length, 1.1 mm.

Description. Rostrum (Fig. 8b) slender, acute, horizontal, reaching to about distal margin of proximal segment of antennular peduncle, with four small acute dorsal teeth, all well in advance of posterior orbital margin, ventral margin unarmed. Carapace (Fig. 8a) without supraorbital spines or tubercles, orbital notch large, antennal spine well developed, anterolateral angle of branchiostegite bluntly obtuse.

Telson (Fig. 8h) about 2.5 times longer than proximal width, with two pairs of dorsal spines, anterior pair subdorsal, about 0.12 of telson length, at 0.15 of telson length, posterior pair smaller, marginal, at 0.66 of telson length, posterior margin feebly convex, about 0.45 of anterior width, without median point, lateral spines small, more slender than distal dorsal spines, intermediate spines robust, 0.2 of telson length, submedian spines slightly shorter, setulose.

Antennular peduncle (Fig. 8c) with proximal segment with distolateral angle produced, acute, feebly bifid on left, with ventromedial tooth, stylocerite short, acute. Antenna (Fig. 8d) with basicerite unarmed; scaphocerite exceeding antennular peduncle, with acute distolateral tooth, slightly exceeded by lamella, carpocerite short, not reaching half scaphocerite length. Eye large, cornea hemispherical, diameter about 0.3 of carapace length.

First pereiopod (Fig. 8e) short, stout; chela subcylindrical, compressed, 1.5 times longer than deep, fingers subequal to palm length, robust, tapering, with small acute hooked tips, cutting edges lateral, entire; carpus about 0.8 of chela length; merus subequal to chela; ischium about 0.7 of chela length.

Second pereiopods (Fig. 9a) subequal, similar. Right chela (Fig. 9b) about 1.1 times carapace length, palm about 2.1 times longer than proximal depth, tapering distally, moderately compressed, generally smooth, with four relatively large very acute tubercles dorsally, one ventrally; dactyl (Figs 9c, d) subcircular, about 1.25 times longer than deep, about 0.38 of palm length, highly compressed, laminar, with strong acute distal tooth, with convex entire sharp cutting edge, without molar process; fixed finger about 1.5 times longer than deep, tapering distally to strongly acute bidentate tip, upper tooth slightly long than lower, cutting surface deeply cannulate, lateral margin strongly raised, convex, lower margin concave; carpus normal, distally excavate; merus about 0.5 of palm length, unarmed; ischium 1.3 times meral length, unarmed. Left pereiopod (Fig. 9d) with fingers similar, without molar process.

Ambulatory pereiopods robust. Third pereiopod (Fig. 8f) with dactyl (Fig. 8g) about 0.3 of propod length, unguis well developed, slender, unarmed, 3.0 times longer than basal width, 0.65 of corpus length, corpus 1.6 times longer than deep, compressed, feebly tapered distally, with large slender, very acute preterminal accessory tooth, ventral border otherwise unarmed; propod (Fig. 9e) about 0.45 times carapace length, 4.0 times longer than deep, with one long distoventral spine, three ventral spines. Fourth pereiopod similar, propod (Fig. 9f) 0.85 of third propod length, with two ventral spines. Fifth pereiopod with propod (Fig. 9g) slender, 6.0 times longer than deep, about 1.15 times longer than third propod, without ventral spines; dactyl with accessory tooth feebly developed.

Uropod (Fig. 8i) without special features, lateral margin of exopod feebly convex, entire, with small acute distolateral tooth, with larger mobile spine medially.

Remarks. The larval and post-larval stages of the numerous Indo-West Pacific species of the genus *Periclimenaeus* are at present all undescribed. Gurney and Lebour (1941) described the larvae and post-larvae of some Bermudan species: *Periclimenaeus (?)wilsoni* (Hay), *Periclimenaeus* sp. B. and *Periclimenaeus bermudensis* (Armstrong); since then no further descriptions have been published.

The genus *Periclimenaeus* at the moment contains some 56 species, with 45 Indo-West Pacific species, all presenting a wide range of minor morphological variations at species level. The morphology of the first post-larval stages provides some indications of the plesiomorphic state from which all these minor variations may be derived. Even so, *Periclimenaeus* sp. B. of Gurney and Lebour (1941) and the present speci-

men show some close resemblances that are not present in the post-larva of *Periclimenaeus wilsoni*. In these two, the major second pereiopods are subequal and similar, the fingers of the chelae are similar in the two taxa, with the fixed finger deeply cannulate and the dactyl lacking a distinct molar process (one of the diagnostic features of the genus when adult). In the present specimen, the dactyl is much deeper and the fixed finger distally bidentate, in contrast to *Periclimenaeus* sp. B. *Periclimenaeus* sp. B. also differs from the present specimen in the presence of rudimentary exopods on the first four pereiopods. *Periclimenaeus (?)wilsoni* also has these exopods (not shown in Gurney and Lebour 1941: fig. 17k), but more significantly, it

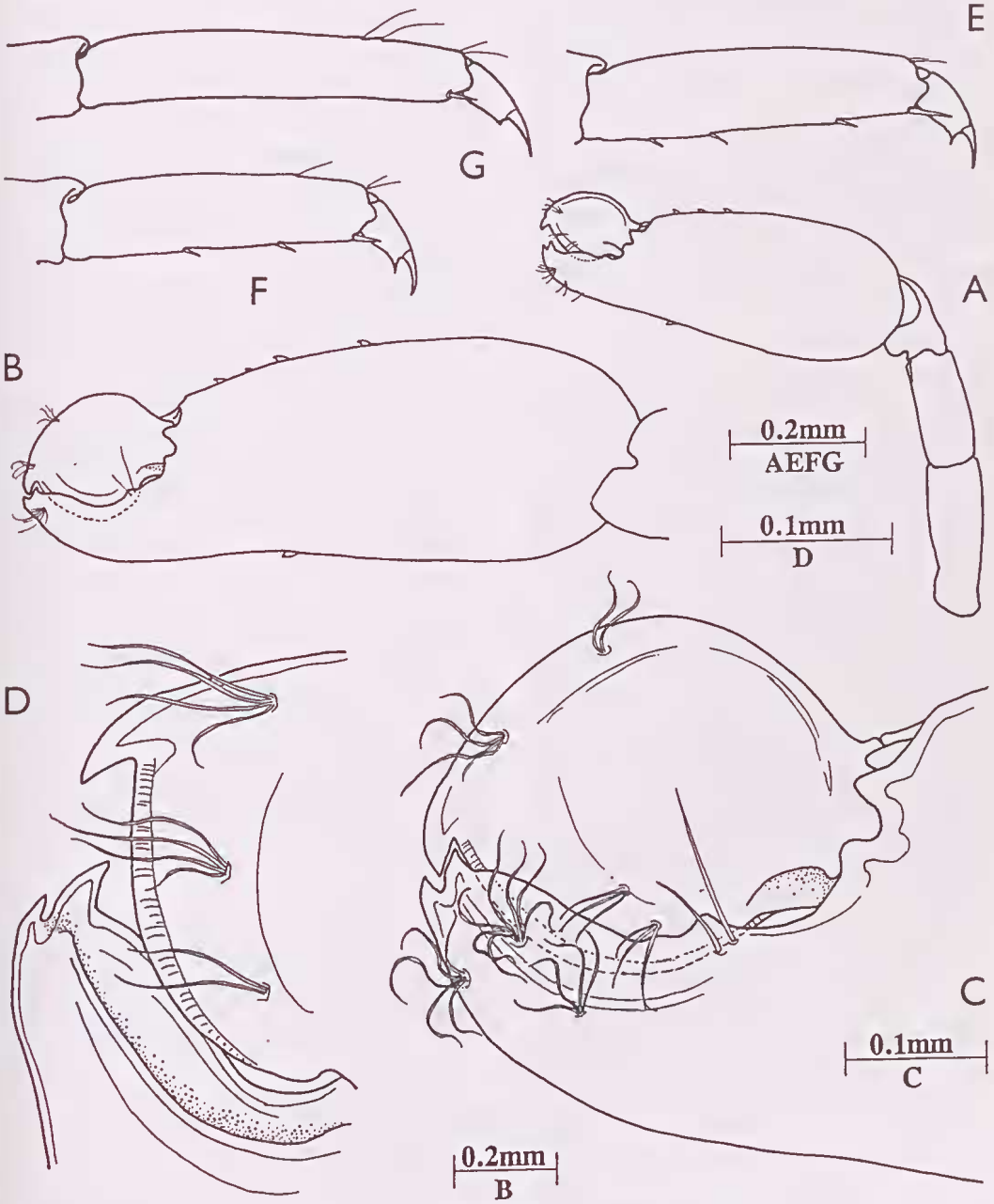

Fig. 9. *Periclimenaeus stylirostris*, post-larva. **A**, second pereiopod, left; **B**, right, chela; **C**, same, fingers; **D**, left, distal fingers of chela; **E**, third pereiopod, propod and dactyl; **F**, fourth pereiopod, same; **G**, fifth pereiopod, same.

differs from both the other post-larvae in having the second pereiopods already distinctly unequal, and the fingers illustrated show the characteristic dactylar molar process, with an opposing fossa on the fixed finger. The fingers of the minor chela are not described or illustrated, but may be presumed to lack these features. As the specimen was obtained by moult from an earlier larval stage, there is no doubt that it is the first post-larval stage. As the larvae were obtained from the plankton, the identity of the species is uncertain, especially as some 11 species of *Periclimenaeus* are now known from the tropical western Atlantic Ocean.

A minor point of additional interest is that in the specimens referred to *Periclimenaeus (?)wilsoni*, the corpus of the ambulatory dactyl bears a small acute tooth proximally. Such a tooth is not present in adults of *P. wilsoni*. A similar tooth may be found in the adults of several Indo-West Pacific species that occur in associations with compound ascidians. A similar basal tooth is present on the ambulatory dactyl of *P. ascidiarum* Holthuis, 1951, and it is possible that these post-larvae should be referred to this or some related species. It is noteworthy that this apomorphic feature may be present at such an early stage. It may also be noted that Gurney and Lebour (1941) describe and illustrate the posterior margin of the telson as presenting "two pairs of apical spines, with a pair of feathered setae between them", suggesting a close relationship to shrimps of the subfamily Palaemoninae. However, in the present specimen, the submedian spines, although setulose, are robust and rigid, and may appropriately be considered to be "spines", and thus to conform at this early ontogenic stage, to the current definition of the Pontoniinae.

The present post-larval specimen is provisionally referred to *P. stylirostris* on account of the highly characteristic fingers of the second pereiopods which are virtually identical with those of the minor chela of adult *P. stylirostris* as figured in Bruce (1972a). This species has not been formally recorded in Australian waters but the specimen reported from Elizabeth Reef, South Pacific Ocean (*Periclimenaeus* in Lowry and Springthorpe 1992) has been re-studied and found to be an ovigerous female of this species. The fingers of the minor second pereiopod are exactly as in the juvenile specimen, but the rostrum has a dentition of 7/0. The palms of both chelae are smooth and without denticles.

Australian distribution. Elizabeth Reef, Coral Sea. Northern Territory: not previously recorded.

Further distribution. Type locality: South China Sea, 20°34.0'N, 113°30.5'E, *ca.* 90m. Also known from Viti Levu, Fijian Islands.

Periclimenaeus tridentatus (Miers)

Coralliocaris tridentatus Miers, 1884: 2946, pl. 32C.

Periclimenaeus tridentatus - Holthuis 1952: 140-146, figs 63-65 (*partim*); - Bruce 1983a: 44-45; 1993c: 834-838.

Material examined. 1♂, 1♀, stn CP/6, Coral Bay, 3-4 m, 23 June 1981, coll. A.J. Bruce *et al.*, in unidentified colonial ascidian, NTM Cr.000097. 1 ovig.♀, same data as previous, NTM Cr.000150. 1 ovig.♀, same data as previous, NTM Cr.008564. 1♂, 1♀, stn CP/16, Trepang Bay, 2 m, 14 October 1981, coll. A.J. Bruce *et al.*, in unidentified ascidian, NTM Cr.001871. 2♂, 2♀, 1 ovig.♀, stn CP/21, Coral Bay, 1-3 m, 18 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.000156. 2♂, 2 ovig.♀, same data as previous, NTM Cr.000157. 1♂, stn NY/4, McCluer Island, 7 m, 16 October 1982, coll. A.J. Bruce, in unidentified ascidian, NTM Cr.009313.

Remarks. The specimens NTM Cr.000097 and NTM Cr.008564 have been reported upon by Bruce 1993c.

Australian distribution. Type locality: Thursday Island, Torres Straits. Northern Territory: Port Essington (Bruce 1983a). Western Australia: Cape Jaubert. Queensland: Heron Island, Wistari Reef.

Further distribution. Also reported from Moçambique; Singapore; Indonesia; Mariana Islands; Johnson and Palmyra Islands, and Pearl and Hermes Reefs.

Periclimenella spinifera (De Man)

Periclimenes Petitthouarsi var. *spinifera* De Man, 1902: 284.

Periclimenes (Ancylocaris) spiniferus - Kemp 1922: 195-196.

Periclimenes (Harpilius) spiniferus - Holthuis 1952: 76-78, fig. 30.

Periclimenes spiniferus - Bruce 1983a: 42; 1988b: 229.

Periclimenella spinifera - Duris and Bruce 1995:656-661, figs 19-21.

Material examined. 2♂, 1 ovig.♀, stn CP/2, Kennedy Bay, 2 m, 22 June 1981, coll. A.J. Bruce, P. Horner, J.N.A. Hooper, on coral *Acropora* sp., NTM Cr.007618. 1 ovig.♀, same data as previous, NTM Cr.008544. 1♂, 1 ovig.♀, stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. A.J. Bruce, P. Horner, J.N.A. Hooper, on *Acropora* sp., NTM Cr.008548. I spm., same data as previous, NTM Cr.008552. 1♂, 1 ovig.♀, same data as previous, NTM Cr.008559. 1♂, same data as previous, NTM Cr.008560. 2 spms, stn CP/16, Trepang Bay, 2 m, 14 October 1981, coll. A. Bruce *et al.*, on coral *Seriatopora* sp., NTM Cr.001903. 3 spms (1 ovig.♀), same data as previous, on coral *Stylophora* sp., NTM Cr.008643. 1 ovig.♀, stn NY/5, McCluer Island, 1 m, 16 October 1982, coll. A.J. Bruce, P. Horner, NTM Cr.009319. 2 ovig.♀, stn NY/8, Oxley Island, LWS, 19 October 1982, coll. J. Robinson, A.J. Bruce, NTM Cr.007764. 7 spms (3 ovig.♀, 1 juv.), stn NY/9, Oxley Island, LWS, 20 October 1982, coll. A.J. Bruce, NTM Cr.003155. 1♂, stn CP/64, Coral Bay, 3-4 m, 18 May 1983, coll. N.L. Bruce, on *Acropora* sp., NTM Cr.009274. 1 spm., same data as previous, NTM Cr.009345. 3 ovig.♀, stn CP/65, Coral Bay, 0.5 m, 18 May 1983, coll. N.L. Bruce, NTM Cr.009282. 1♂, 2 ovig.♀, stn CP/75, Coral Bay, *ca.* 5 m, 15 September 1985, coll. J.E.N. Veron, R. Williams, on *Acropora samoensis*, NTM Cr.007570. 6 spms, stn CP/95, Coral Bay, 5-6 m, 12 August 1986, coll. R. Williams *et al.*, on *Stylophora* sp., NTM Cr.004154.

Australian distribution. Northern Territory: Dudley Point, Darwin; Darwin Harbour (Bruce 1983a, 1987c). Queensland: Heron Island, One Tree Island, Low Isles, North West Island.

Further distribution. Type locality: Ternate, Indonesia. Also reported from Kenya; Tanganyika; Madagascar; Seychelle Islands; La Réunion; Gulf of Manaar, India; Maldive Islands; Lakshadweep; Chagos Islands; Nicobar Islands; Mergui Islands; Perhentian Islands; Singapore; South China Sea; Philippines; Indonesia; Papua New Guinea; Ryukyu Islands; Marshall Islands; Marianas Islands; Fiji Islands; Samoa; Wake Island and Tahiti.

Periclimenes affinis (Zehntner)

Palaemonella affinis Zehntner, 1894: 208.

Periclimenes (Harpilius) affinis - Holthuis 1958: 6-8, fig. 2.

Material examined. 64 spms (16 ovig.♀), stn CP/30, Black Point, 10-12 m, 29 April 1982, coll. P. Horner, H.K. Larson, on crinoid *Heterometra magnipinna*, NTM Cr.000294 A & B.

Remarks. The specimens were all collected from a single host crinoid, *Heterometra magnipinna* A.H. Clarke (det. F. Rowe) and represent an unusually large population of associated shrimps from a single host crinoid. *Periclimenes affinis* has been previously associated with the crinoids *Comanthina schlegeli, Comatula cratera* and *Comanthus* sp. The association with *Heterometra* represents a new host record.

Australian distribution. Northern Territory: not previously recorded. Queensland: Wistari Reef, Capricorn Islands.

Further distribution. Type locality: Ambon, Indonesia. Also recorded from the South China Sea; New Caledonia; Philippines; Indonesia and (?) Japan.

Periclimenes alegrias Bruce

Periclimenes alegrias Bruce, 1987a: 143-151, figs 1a, 2-5, 15 a-c; 1988b: 228; 1990b: 11.

Material examined. 1 ovig.♀ paratype, stn CP/70, Coral Bay, 2-5 m, 12 September 1985, coll. L. Vail, on crinoid *Lamprometra palmata*, NTM Cr.003223. 1 ovig.♀ holotype, stn CP/76, Coral Bay, 6 m, 15 September 1985, coll. L. Vail, on crinoid *Stephanometra spicata*, NTM Cr.004071. 1♂, 1 ovig.♀ paratypes, stn CP/97, Coral Bay, 12 August 1986, coll. A. Hoggett, on crinoid *Lamprometra klunzingeri*, NTM Cr.004168. 3 juvs, stn CP/99, Orontes Reef, 11-12 m, 13 August 1986, coll. A. Hoggett, on *Lamprometra klunzingeri*, NTM Cr.004173.

Australian distribution. Type locality: Port Essington, Northern Territory. Northern Territory: East Point, Darwin (Bruce 1988b); North West Vernon Island (Bruce 1990b).

Further distribution. Not known outside Australian waters.

Periclimenes amymone De Man

Periclimenes amymone De Man, 1902: 829-833, pl. 25, fig. 53; - Bruce 1988b: 228.

Material examined. 1♂, 1 ovig.♀, stn CP/2, Kennedy Bay, 2 m, 22 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on coral *Acropora* sp., NTM Cr.008531. 6 spms (2 ovig.♀), same data as previous, on *Acropora* sp., NTM Cr.008537. 1♂, 1 ovig.♀, 2 juv., same data as previous, NTM Cr.008540. 1♂, 2 ovig.♀,

1 juv., stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on *Acropora* sp., NTM Cr.008536. 1♂, 1 ovig.♀, 2 juv., same data as previous, on *Acropora* sp., NTM Cr.008558. 1♂, 1 ovig.♀, stn CP/6, Coral Bay, 3-4 m, 23 June 1981, coll. J.N.A. Hooper, A.J. Bruce, P. Horner, on *Acropora* sp., NTM Cr.008539. 1♂, 1 ovig.♀, same data as previous, NTM Cr.008551. 1 spm., stn CP/13, Coral Bay, 0.5 m, 20 July 1981, coll. J.R. Hanley *et al.*, on *Acropora* sp., NTM Cr.003007. 8 spms, stn CP/16, Trepang Bay, 2 m, 14 October 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on coral *Seriatopora* sp., NTM Cr.001902. 20 spms (7 ovig.♀), same data as previous, on coral *Stylophora* sp., NTM Cr.008645. 12 spms, stn CP/20, Walford Point, Coral Bay, LWS, 17 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.001948. 8 spms, stn CP/21, Coral Bay, 1-3 m, 18 October 1981, coll. P.N. Alderslade *et al.*, NTM Cr.001881. 1 spm., stn CP/33, Port Bremer, 6 m, 1 May 1982, coll. J.N.A. Hooper, P.N. Alderslade, NTM Cr.009331. 4 spms, stn CP/37, Table Head, 1-3 m, 3 May 1982, coll. P. Horner, on *Acropora* sp., NTM Cr.000304. 1 spm., stn NY/1, New Year Island, 10 m, 13 October 1982, coll. P. Horner, on *Seriatopora* sp., NTM Cr.003174. 1 spm., same data as previous, on *Seriatopora* sp., NTM Cr.007755. 8 spms (5 ovig.♀), same data as previous, on *Seriatopora* sp., NTM Cr.007757. 1♂, 4 ovig.♀, stn NY/2, New Year Island, 10 m, 14 October 1982, coll. A.J. Bruce, on *Seriatopora* sp., NTM Cr.009290. 5 spms, same data as previous, NTM Cr.009293. 4 ovig.♀, stn NY/3, New Year Island, 16 m, 14 October 1982, coll. P. Horner *et al.*, NTM Cr.007777. 1♂, 2 ovig.♀, stn NY/4, McCluer Island, 7 m, 16 October 1982, coll. A.J. Bruce, NTM Cr.009277. 2♂, 1 ovig.♀, 1♀, stn NY/5, McCluer Island, 1 m, 16 October 1982, coll. A.J. Bruce, P. Horner, NTM Cr.009323. 1 ovig.♀, 1♀, same data as previous, NTM Cr.009325. 2 spms, same data as previous, NTM Cr.009330. 4 spms (1 ovig.♀), stn NY/9, Oxley Island, LWS, 20 October 1982, coll. A.J. Bruce, NTM Cr.009292. 18 spms (2 ovig.♀), same data as previous, NTM Cr.009327. 6 spms, stn CP/51, Table Head, 13 May 1983, coll. N.L. Bruce, on *Acropora* sp., NTM Cr.010248. 2 spms, stn CP/60, Coral Bay, <6 m, 16 May 1983, coll. N.L. Bruce, D. Staples, on *Acropora* sp., bopyridized, NTM Cr.010130. 3 spms, same data as previous, on *Stylophora* sp., NTM Cr.010251. 3 spms (1 juv. bopyridized), same data as previous, on *Stylophora* sp., NTM Cr.010517. 2 spms, stn CP/61, Coral Bay, 4 m, 17 May 1983, coll. N.L. Bruce, J.R. Hanley, NTM Cr.010240. 3 spms, same data as previous, NTM Cr.010246. 7 spms, same data as previous, on *Acropora* sp., NTM Cr.010250. 7 spms, same data as previous, NTM Cr.010518. 8 spms (1 ovig.♀), stn CP/64, Walford Point, 3-4 m, 18 May 1983, coll. N.L. Bruce, NTM Cr.009338. 1 ovig.♀, same data as previous, NTM Cr.010243. 2 spms, same data as previous, on *Acropora* sp., NTM Cr.010519. 1♂, stn CP/69, Table Head, 1-4 m, 12 September 1985, coll. J.E.N. Veron, J.N.A. Hooper, on *Acropora samoensis*, NTM Cr.007622. 1 spm., same data as previous, on *Acropora subulata*, NTM Cr.007623. 5 spms (1 ovig.♀), stn CP/70, Coral Bay, 2-5 m, 12 September 1985, coll. A.J. Bruce, on *Stylophora* (*pistillata*?), NTM Cr.007556. 3 spms (1 ovig.♀), stn CP/71, Coral Bay, 2-5 m, 13 September 1985, coll. A.J. Bruce, on *Stylophora* (*pistillata*?), NTM Cr.007562. 1 ovig.♀, same data as previous, on *Stylophora pistillata*, NTM Cr. 007563. 1♂, 2 ovig.♀, same data as previous, on *Stylophora* sp., NTM Cr.007564. 1 ovig.♀, same data as previous, on *Acropora subulata*, NTM Cr.007566. 1♂, 2 ovig.♀, stn CP/75, Coral Bay, *ca.* 5 m, 15 September 1985, coll. J.E.N. Veron, R. Williams, on *Acropora samoensis*, NTM Cr.007571. 16 ♂, 1♀, same data as previous, on *Stylophora pistillata*, NTM Cr.007572. 13 spms (5 ovig.♀, 3 juv.) same data as previous, on *Acropora latistella*, NTM Cr.007573. 1 ovig.♀, 1♀, 3 juv., same data as previous, on *Acropora samoensis*, NTM Cr.007604. 3 ovig.♀, same data as previous, on *Stylophora* sp., NTM Cr.007640. 1 ovig.♀, stn CP/76, Coral Bay, 6 m, 15 September, 1985, coll. L. Vail, J.E.N. Veron, R. Williams, on *Stylophora pistillata*, NTM Cr.007552. 1♂, same data as previous, on *Acropora latistella*, NTM Cr.007635. 2 spms (♀ with hemiarthrinid bopyrid), stn CP/82, Coral Bay, 5-6 m, 18 September 1985, coll. P.N. Alderslade, R. Williams, on *Acropora* sp., NTM Cr.007576. 6 spms (3 ovig.♀), same data as previous, on *Acropora digitifera*, NTM Cr.007606. 2♂, 1 ovig.♀, 4 juv., same data as previous, on *Stylophora pistillata*, NTM Cr.007610. 3 juv., stn CP/88, Orontes Reef, 8-10 m, 9 August 1986, coll. C. Johnson, R.C. Willan, on *Acropora* sp., NTM Cr.004102. 5 spms, stn CP/91, Orontes Reef, 10 August 1986, coll. S. Slack-Smith, on coral *Pocillopora* sp.,

NTM Cr.004119. 3 spms, stn CP/93, Coral Bay, 6-8 m, 11 August 1986, coll. R. Williams *et al.*, NTM Cr.004132. 4 spms, CP/95, Coral Bay, 5-6 m, 12 August 1986, coll. R. Williams *et al.*, on *Stylophora* sp., NTM Cr.004156.

Australian distribution. Northern Territory: Dudley Point, Darwin (Bruce 1983a, 1988b). Queensland: Coral Sea, Heron Island, One Tree Island.

Further distribution. Type locality: Ternate, Indonesia. Also known from Nicobar Islands; Singapore; Indonesia; New Caledonia; Papua-New Guinea and Philippines.

Periclimenes anacanthus Bruce
(Fig. 12a)

Periclimenes anacanthus Bruce, 1988a: 105-114, figs 1-5.

Material examined. 1 ovig.♀, stn CPV/8, West of Barrow Bay, LWS, 18 September 1985, coll. J.R. Hanley *et al.*, NTM Cr.007652.

Remarks. The single example agrees well with the original description and is only the second record of this species. The rostrum has a dentition of 1 + 8/3 and the merus of the single second pereiopod is without any trace of a distoventral tooth. The fingers have a small proximal diastema with small acute teeth on each side (Fig. 12a).

Australian distribution. Type locality: Dunwich, North Stradbroke Island, Queensland. Northern Territory: not previously recorded.

Further distribution. Not recorded outside Australian waters.

Periclimenes brevicarpalis (Schenkel)

Ancylocaris brevicarpalis Schenkel, 1902: 563, pl. 13, fig. 21; - Bruce 1988b: 228.

Periclimenes (Ancylocaris) brevicarpalis - Kemp 1922: 185-191, figs 40-42, pl. 67.

Periclimenes (Harpilius) brevicarpalis - Holthuis 1952: 69-73, fig. 27.

Periclimenes brevicarpalis - Bruce 1983a: 43.

Material examined. 1♂, 1 ovig.♀, stn CP/68, Coral Bay, 2-3 m, 19 May 1983, coll. N.L. Bruce, J.R. Hanley, from unidentified anemone, NTM Cr.000442. 1 spm., stn CP/97, Coral Bay, 12 August 1986, coll. C. Johnson, from unidentified anemone, NTM Cr.004165.

Australian distribution. Northern Territory: Dudley Point, Darwin (Bruce 1983a, 1988b). Queensland: Heron Island, Magnetic Island, Murray Island, Torres Strait, Low Isles, Saddleback Island, Hope Island, Port Denison. Western Australia: Hermite Island, Monte Bello Islands.

Further distribution. Type locality: Makassar, Sulawesi, Indonesia. Also known from the Red Sea; throughout most of the Indian Ocean, and western Pacific to Japan; Solomon Islands, Vanuatu; Caroline Islands and Marshall Islands.

Periclimenes cobourgi sp. nov.
(Figs 10-11)

Type material. 1 ovig.♀ holotype, stn CP/37, Table Head, 3 m, 3 May 1982, coll. H.K. Larson, P. Horner, on gorgonian *Rumphella aggregata*, NTM Cr.000307.

Diagnosis. A small sized species of *Periclimenes*, of slender, subcylindrical body form.

Rostrum (Fig. 11a) well developed, acute, reaching almost to distal margin of intermediate segment of antennular peduncle, horizontal, dorsal carina well developed, convex, with seven acute teeth, all anterior to posterior orbital margin, postrostral carina extending over anterior half of carapace; lateral carinae obsolete, ventral carina absent, lower margin feebly biconvex, distally unarmed, with few short setae proximally.

Carapace (Fig. 10a) smooth, with well developed epigastric spine at about 0.3 of carapace length, on postrostral carina; inferior orbital angle produced, distally rounded, antennal spine acute, marginal, hepatic spine at about 0.2 of carapace length, anterolateral angle of branchiostegite bluntly obtuse.

Abdominal segments normal, third segment not posterodorsally produced, sixth segment twice the fifth segment length, twice as long than deep. Telson (Fig. 11m) about 0.9 of sixth segment length, 3.75 times longer than anterior of telson width, posterior margin (Fig. 11n) about 0.33 of anterior width, angular, with small acute median process, lateral spines small, slightly larger than dorsal spines, intermediate spines about 0.15 of telson length, submedian spines about 0.5 of intermediate spine length, setulose.

Antenna (Fig. 11b) with proximal segment of peduncle about 2.6 times longer than wide, anterolateral margin produced, rounded lobe medially with small acute tooth laterally, lateral

margin convex, stylocerite slender, acute, reaching 0.5 of segment length, statocyst normally developed, ventromedial margin with small acute tooth; intermediate and distal segments combined length about 0.45 of proximal segment length; upper ramus with four fused segments, shorter ramus with single free segment, with six groups of aesthetascs, longer ramus filiform; lower ramus filiform.

Antenna (Fig. 11c) with basicerite with acute distoventral tooth, carpocerite reaching to about middle of scaphocerite; scaphocerite about 3.8 times longer than broad, with strong distolateral tooth at about 0.75 of length, far exceeding antennular peduncle.

Eye (Fig. 11d) well developed with large globular cornea, diameter about 0.27 of carapace length, peduncle elongate, about 1.6 times longer than proximal width, tapering slightly distally, accessory pigment spot well developed, on raised tubercle (Fig. 11e); eye length about 0.6 of carapace length.

Third maxilliped (Fig. 11f) normal, ischiomerus feebly separated from basis, exopod with four plumose setae distally, epipod large, subcircular, without arthrobranch.

Thoracic sternites broad, fourth sternite with stout anterior median process (Fig. 11g)

First pereiopods (Fig. 11g) extend to end of antennular peduncle. Chela (Fig. 11h) with palm 2.0 times longer than deep, compressed, fingers subequal to palm length, slender, with acute, feebly hooked simple tips, cutting edges entire, lateral, extending over distal 0.6 of fingers; carpus subequal to chela; merus 1.1 times carpus length, subcylindrical, unarmed; coxa with small distoventral lobe.

Second pereiopods (Fig. 11i) feeble, subequal, similar, reaching to end of scaphocerite; chela (Fig. 11j) small, about 0.55 of carapace length, palm 2.0 times longer than deep, slightly swollen, compressed, smooth, fingers subequal to palm length, slender, with lateral entire cutting edges over distal 0.6, tips simple, feebly hooked; carpus about 0.9 of chela length, unarmed, slender, 8.0 times longer than sub-distal width; merus 0.8 of carpal length, subcylindrical, 7.0 times longer than wide, unarmed; ischium 1.2 times meral length.

Ambulatory pereiopods slender. Third pereiopod with dactyl (Fig. 11l) about 0.33 of propod length, slender, compressed, unguis not distinctly demarcated, about 0.8 of corpus length, compressed, with sharp ventral margin, accessory tooth well developed, 0.65 of unguis length; propod (Fig. 11k) 10.0 times longer

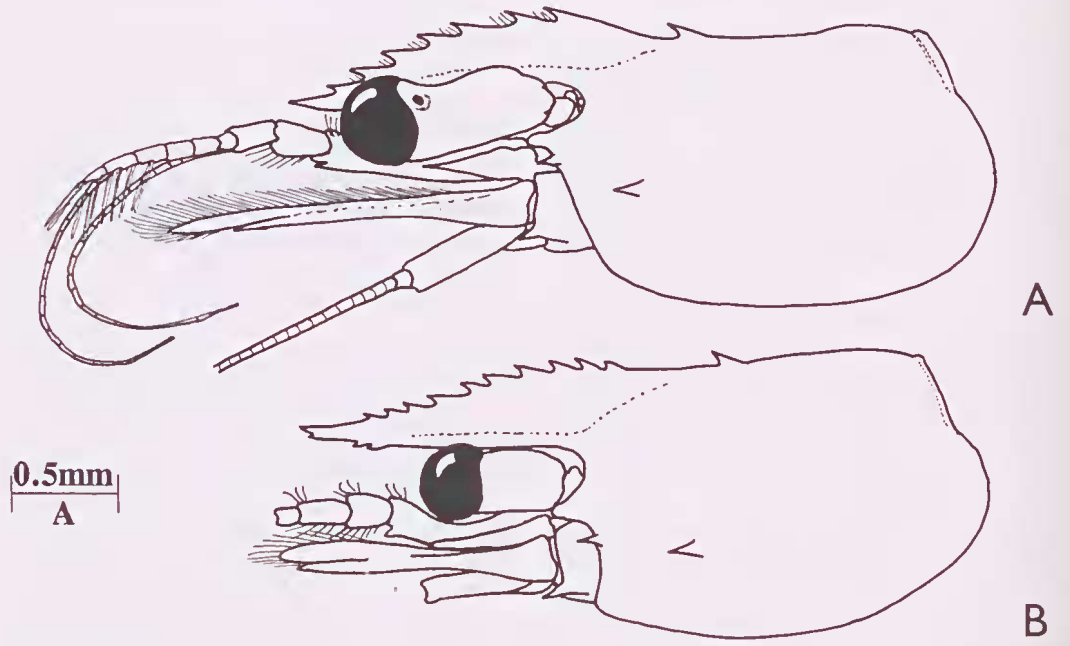

Fig. 10. A, *Periclimenes cobourgi* sp. nov., holotype female, Table Head, Port Essington; B, *Periclimenes indicus* (Kemp), ovigerous female (after Kemp (1915)).

than deep, with one pair of long distoventral spines, longer spine about 0.45 of dactyl length, one pair of distal ventral spines, two long ventral spines.

Uropods normal, exceeding telson. Ova small, *ca.* 0.5mm.

Measurement. Ovigerous female, carapace length 1.5mm.

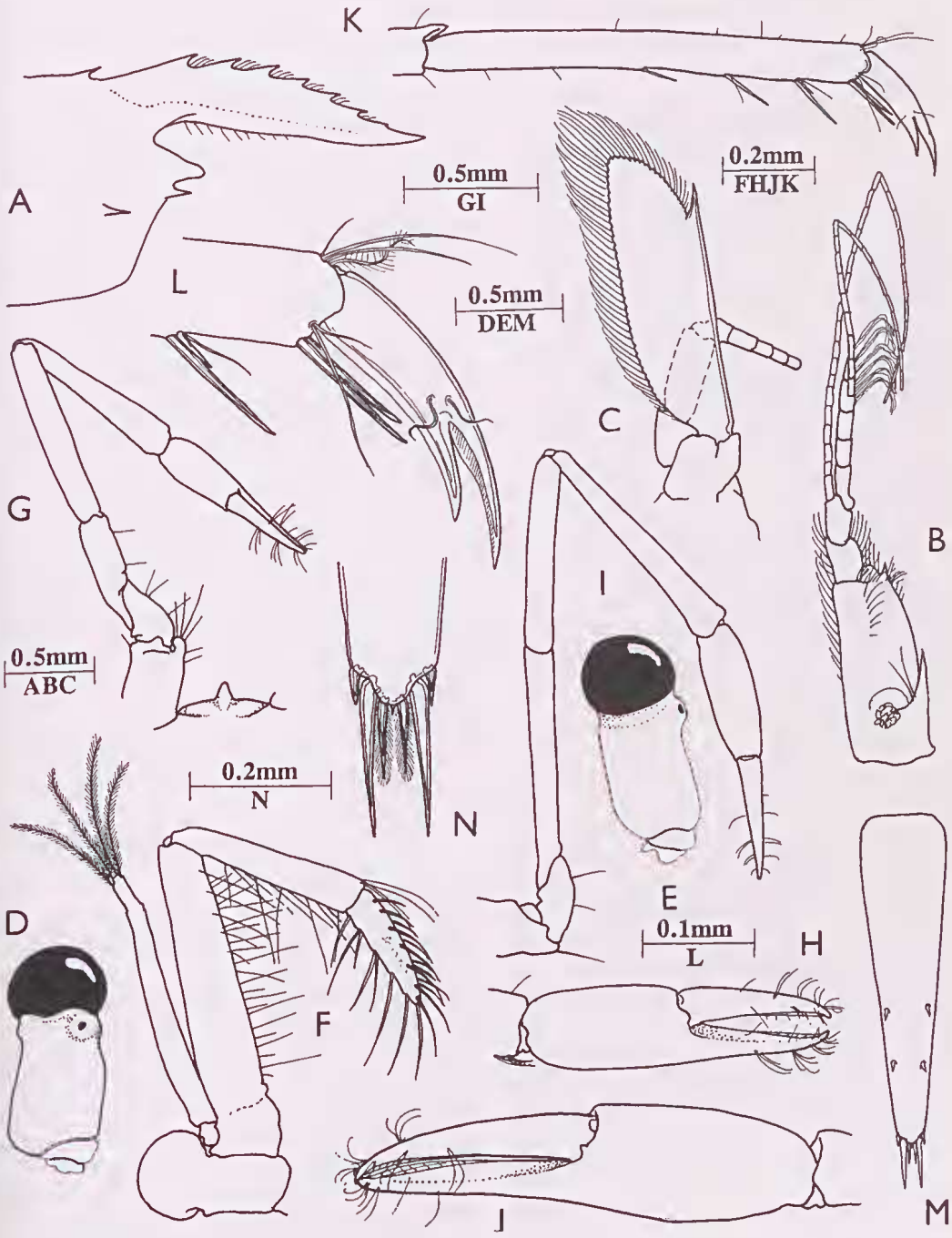

Fig. 11. *Periclimenes cobourgi* sp. nov., ovigerous female holotype. **A**, anterior carapace, rostrum; **B**, antennule; **C**, antenna; **D**, eye, dorsal; **E**, same, posterior; **F**, third maxilliped; **G**, first pereiopod; **H**, same, chela; **I**, second pereiopod; **J**, same, chela; **K**, third pereiopod, propod, dactyl; **L**, same, dactyl; **M**, telson; **N**, same, posterior margin.

Table 2. *Periclimenes cobourgi* sp.nov. may be distinguished from *P. indicus* by the following characteristics.

Periclimenes cobourgi sp. nov.	*Periclimenes indicus* (Kemp)
1. Rostral dentition 7/0.	Rostral dentition 8-10/1-3
2. Dorsal margin of rostrum convex, rostrum not appearing angular.	Dorsal margin of rostrum sublinear, giving rostrum an angular shape.
3. Rostrum not exceeding intermediate segment of antennular peduncle.	Rostrum distinctly exceeding intermediate segment of antennular peduncle.
4. Epigastric spine at about 0.3 of CL.	Epigastric spine at about 0.5 of CL.
5. Hepatic spine at lower, more anterior position (Fig. 9a).	Hepatic spine at higher, more posterior position (Fig. 9b).
6. Upper flagellum of antennule with first four segments fused, one free segment.	Upper antennular flagellum with first nine segments fused, two to three free segments.
7. Scaphocerite far exceeding antennular peduncle.	Scaphocerite only slightly exceeding antennular peduncle.
8. Eye stalk reaching 0.8 of rostral length, greater than 0.6 of CL.	Eye stalk reaching about 0.6 of rostral length, distinctly less than 0.5 of CL.
9. Anterolateral angle of branchiostegite bluntly obtuse.	Anterolateral angle of branchiostegite bluntly subrectanglar, feebly produced.
10. Corneal diameter about 0.25 of CL, 0.65 of stalk length, with accessory pigment spot on raised tubercle.	Corneal diameter about 0.22 of CL, 0.87 of stalk length, accessory pigment spot not on raised tubercle.
11. Third ambulatory pereiopod with long ventral spines over distal half of propod: spines long, greater than propod width, about half dactyl length.	Third ambulatory pereiopod with 7-8 spines over whole several propod length: spines short, less than propod width, much less than half dactyl length.
12. Ambulatory dactyl with accessory tooth about 0.6 of length of unguis.	Ambulatory dactyl with accessory tooth less than half length of unguis.
13. Telson posterior margin with small acute median process.	Telson posterior margin without acute median process.

Host. *Rumphella aggregata* (Nutting) (Gorgonacea).

Etymology. The specific name is derived from the collection locality, the Cobourg Peninsula, Arnhem Land.

Systematic position. *Periclimenes cobourgi* appears closely related only to *Periclimenes indicus* (Kemp, 1915), a species that shows some resemblance to the *Periclimenes grandis* species group *sensu lato* (Bruce 1987d), on account of the presence of a median process on the anterior fourth thoracic sternite. Both species are unusual in that group in having strongly biunguiculate dactyls on the ambulatory pereiopods, and also differ significantly from most species of the group in the very feeble development of the second pereiopods. They appear to occupy a rather isolated systematic position among the numerous species of the genus *Periclimenes*, and are intermediate between the "*grandis*" - group species *sensu lato* and those of the rest of the genus *Periclimenes sensu stricto*.

Remarks. The association of *P. cobourgi* with a gorgonian host contrasts strongly with the habits of *P. indicus*. *P. indicus* was first reported from Chilka Lake, a brackish water situation (Kemp 1915). The validity of the association with this gorgonian host is also supported by the presence of broad thoracic sternites, a common feature in other gorgonian associated genera such as *Pontonides* and *Hamodactylus*.

Periclimenes commensalis Borradaile

Periclimenes (Cristiger) commensalis Borradaile, 1915: 211.

Periclimenes (Periclimenes) commensalis - Clark 1921: 628.

Allopontonia iaini - Lowry and Springthorpe 1992: 128.

Material examined. 1 spm., stn CP/23, Walford Point, 5 m, 19 October 1981, NTM Cr.005351. 1 spm., stn CP/24, Smith Point, 4-5 m, 19 October 1981, NTM Cr.005359. 1♀, same data as previous, NTM Cr.005362. 1 spm., stn CP/26, Sandy Island No. 2, 7 m, 20 October 1981, coll. P.N. Alderslade, J.N.A. Hooper, on soft coral *Telesto* sp., NTM Cr.005356. 1 ovig.♀, stn NY/2, New Year Island, 10 m, 14 October 1982, coll. A.J. Bruce, NTM Cr.009296. 1♂, same data as previous, on unidentified crinoid, NTM Cr.009297. 1♂, 1 ovig.♀, same data as previous, NTM Cr.009299.

Remarks. This species is a well known associate of crinoid echinoderms. The specimens referred to *Allopontonia iaini* from Elizabeth and Middleton Reefs, Coral Sea (Lowry and Springthorpe 1992) have been re-examined and their material from *Oxycomanthus bennetti* was found to belong to *Periclimenes commensalis*.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island, Bribie Passage, Myora, North Stradbroke Island, Elizabeth and Middleton Reefs.

Further distribution. Type locality: Murray Island, Torres Strait, Queensland. Also known from Zanzibar; Kenya; Moçambique; Indonesia; Philippines; Hong Kong; Japan; Ryukyu Islands; Marshall Islands; New Caledonia; Solomon Islands and Fijian Islands.

Periclimenes diversipes Kemp

Periclimenes (Ancylocaris) diversipes Kemp, 1922: 179-184 (*partim*), figs 36-39; - Bruce 1987c: 37.

Material examined. 1 ovig.♀, stn CP/2, Kennedy Bay, 2 m, 22 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on coral *Turbinaria* sp., NTM Cr.008565. 1 ovig.♀, stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on *Turbinaria* sp., NTM Cr.008554. 1♂, 2 ovig.♀, same data as previous, on coral *Acropora* sp., NTM Cr.008561. 5 spms (2 ovig.♀), stn CP/61, Coral Bay, 4 m, 17 May 1983, coll. N.L. Bruce, J.R. Hanley, on coral *Herpolitha limax*, NTM Cr.000438.

Remarks. The association of this common coral commensal with *Herpolitha* represents a new host record.

Australian distribution. Northern Territory: Darwin Harbour (Bruce 1987c). Queensland: Heron Island, Restoration Rock.

Further distribution. Type locality: Kilikarai, Gulf of Manaar. Also reported from the Red Sea; Aden; Kenya; Tanganyika; Comoro Islands; Madagascar; Seychelle Islands; Zanzibar; La Réunion; Singapore and Thailand.

Periclimenes elegans (Paulson)

Anchistia elegans Paulson, 1875: 113, pl. 17, fig. 1.

Periclimenes (Ancylocaris) elegans - Kemp 1922: 215-218, fig. 60-62.

Periclimenes (Harpilius) elegans - Holthuis 1952: 81-82, fig. 31.

Periclimenes elegans - Bruce 1988b: 288.

Material examined. 1 spm., stn CP/2, Kennedy Bay, 2 m, 22 June 1981, coll. J.N.A. Hooper, P. Horner, A.J. Bruce, NTM Cr.002719. 3 spms, stn NY/8, Oxley Island, LWS, 19 October 1982, coll. J. Robinson, A.J. Bruce, NTM Cr.007761. 8 spms (4 ovig.♀, 2 juv.), same data as previous, NTM Cr.007762. 26 spms, stn NY/9, Oxley Island, 20 October 1982, coll. A.J. Bruce, NTM Cr.003156. 7 spms (3 ovig.♀), stn CP/45, Table Head, LW, 11 May 1983, coll. A.J. Bruce, NTM Cr.009346. 2♂, 1 ovig.♀, stn CP/77, Orontes Bay, 10 m, 16 September 1985, coll. R. Williams, on coral *Stylophora pistillata*, NTM Cr.007557. 1 ovig.♀, stn CP/85, Orontes Reef, 10-15 m, 19 September 1985, coll. L. Vail, R. Williams, C. Hood, on soft coral *Dendronepthya* sp., NTM Cr.007615.

Remarks. The associations with *Stylophora* and *Dendronepthya* are probably incidental or accidental.

Australian distribution. Northern Territory: East Point, Darwin (Bruce 1988b).

Further distribution. Type locality: Red Sea. Also recorded from Persian Gulf; Aden; Kenya; Zanzibar; Tanganyika; Pakistan; Seychelle Islands; Nicobar Islands; Madagascar; Andaman Islands; Sri Lanka; Ryukyu Islands; Hong Kong; Indonesia; Singapore; Caroline Islands and Marshall Islands.

Periclimenes galene Holthuis

Periclimenes (Harpilius) galene Holthuis, 1952: 11, 62, fig. 24.

Periclimenes galene - Bruce 1976: 12, figs 3, 4; 1983c: 207.

Material examined. 1 ovig. ♀ (CL 3.3mm), stn NY/4, McCluer Island, 11°02.0'S 132°58.5 E, 7 m, 16 October 1982, on unidentified hydroid, NTM Cr011328.

Remarks. The specimen agrees exactly with the original descriptions, with a slender rostrum with a dentition of 1 + 5 + 1 + 1/0. The specimen was largely transparent in life with the body with about six fine longitudinal brown striae, first and second pereiopods, antennal peduncles and caudal fan speckled with brown dots, pleopods also striate.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island, Lizard Island.

Further distribution. Type locality: Menado, Indonesia. Also known from Kenya; Zanzibar; Tanganyika and Comoro islands.

Periclimenes grandis (Stimpson)

Anchistia grandis Stimpson, 1860: 39.

Periclimenes grandis - Borradaile 1898: 382; - Bruce 1987c: 37; 1988b: 229.

Material examined. 2 juv., stn CP/9, Coral Bay, 0.5 m, 24 June 1981, coll. A.J. Bruce, on coral *Acropora* sp., NTM Cr.008547. 4 spms (2 ovig.♀), stn CP/12, Coral Bay, 0.1-0.5 m, 19 July 1981, coll. A.J. Bruce, NTM Cr.000122. 1 ovig.♀, stn CP/17, Wanaray Point, Trepang Bay, LWS, 15 October 1981, coll. A.J. Bruce, P. Horner, NTM Cr.008696. 28 spms (5 ovig.♀), same data as previous, NTM Cr.008715. 8 spms, stn CP/18, Midjari Reef, Trepang Bay, LWS, 16 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.008242. 2 spms, stn CP/38, Table Head, 2-4 m, 4 May 1982, coll. H.K. Larson *et al.*, NTM Cr.001967. 1♂, stn NY/5, McCluer Island, 1 m, 16 October 1982, coll. A.J. Bruce, P. Horner, NTM Cr.009321. 1 ovig.♀, stn CP/45, Table Head, LW, 11 May 1983, coll. A.J. Bruce, NTM Cr.009360.

Australian distribution. Northern Territory: East Point, Darwin (Bruce 1987c, 1988b). Queensland: Magnetic Island, Port Molle (?).

Further distribution. Type locality: Oshima, Japan. Also recorded from the Red Sea; Jibouti; Aden; Kenya; Zanzibar; Tanganyika; Madagascar; Moçambique; Comoro Islands; Seychelle Islands; India; Sri Lanka; Mergui Islands; Malaya; Singapore; Indonesia; China; Japan; Fijian Islands and Marshall Islands.

Periclimenes holthuisi Bruce

Periclimenes holthuisi Bruce, 1969: 258-259; 1982: 244-246, fig. 7; - Bruce 1983a: 43; 1988b: 229.

Material examined. 1 spm., stn CP/20, Coral Bay, LWS, 17 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.002663. 10 spms, stn CP/21 Coral Bay, 1-3 m, 18 October 1981, coll. P.N. Alderslade *et al.*, NTM Cr.001885. 1♂, 1 ovig.♀, stn CP/28, Sandy Island No. 2, 6-7 m, 22 October 1981, coll. J.R. Hanley, NTM Cr.000117. 1 spm., stn CP/35, Danger Point, Port Bremer, 4 m, 1 May 1982, coll. A.J. Bruce, NTM Cr.001730. 4 spms, stn CP/60, Coral Bay, <6 m, 16 May 1983, coll. N.L. Bruce, D. Staples, on coral *Heliofungia* sp., NTM Cr.010247. 1 juv., stn CP/68, Coral Bay, 2-3 m, 19 May 1983, coll. J.R. Hanley, N.L. Bruce, on unidentified anemone, NTM Cr.010480. 1 juv., stn CP/75, Coral Bay, *ca.* 5 m, 15 September 1985, coll. J.E.N. Veron, R. Williams, on unidentified anemone, NTM Cr.003231. 3 spms (1 ovig.♀), same data as previous, on coral *Euphyllia* sp., NTM Cr.003232. 1 spm., same data as previous, NTM Cr.006339. 1♀, stn CP/80, Orontes Reef, 10 m, 17 September 1985, coll. J.E.N. Veron, R. Williams, NTM Cr.006344. 12 spms (8 ovig.♀), stn CP/86, Coral Bay, 8 m, 7 August 1986, coll. C. Johnson *et al.*, on unidentified anemone, NTM Cr.004075. 4 spms, stn CP/99, Orontes Reef, 11-12 m, 13 August 1986, coll. A. Hogget *et al.*, on unidentified anemone, NTM Cr.004175.

Remarks. The association of this common coelenterate commensal with *Heliofungia* represents a new host record.

Australian distribution. Northern Territory: Cobourg Peninsula, Sandy Island No. 2 (Bruce 1983a) East Point, Darwin (Bruce 1988b). Queensland: Morton Bay, Heron Island, Peloris Island, Bowen.

Further distribution. Type locality: Lung Ha Wan, Hong Kong. Also reported from the Red Sea; Kenya; Zanzibar; Maldive Islands; Sri Lanka; Malaya; Singapore; Indonesia; Papua New Guinea; Japan; Philippines; New Caledonia; Lord Howe Island; Caroline Islands and Marshall Islands.

Periclimenes incertus Borradaile

Periclimenes (Cristiger) incertus Borradaile, 1915: 210; 1917: 384, pl. 53, fig. 7.

Periclimenes incertus - Bruce 1988b: 229.

Material examined. 4 spms, stn CP/27, Sandy Island No. 2, 10 m, 21 October 1981, coll. J.N.A. Hooper *et al.*, on sponge *Ianthella basta*, NTM Cr.003206. 1 ovig.♀, stn CP/28, Sandy Island No. 2, 6-7 m, 22 October 1981, coll. J.R. Hanley, NTM Cr.000161. 1 ovig.♀, stn CP/30, Black Point, 10-12 m, 29 April 1982, coll. P. Horner, H.K. Larson, NTM Cr.000295. 1 ovig.♀, stn CP/44, Table Head, 4-5 m, 11 May 1983, coll. N.L. Bruce, D. Staples, NTM Cr.009336. 1♀, same data as previous, NTM Cr.009339. 1♂, 1 ovig.♀, stn CP/46, off Table Head, 5 m, 12 May 1983, coll. N.L. Bruce, NTM Cr.009353. 2 spms (1 ovig.♀), stn CP/60, Coral Bay, <6 m, 16 May 1983, coll. N.L. Bruce, D. Staples, NTM Cr.010520. 2♂, 2 ovig.♀, stn CP/62, Coral Bay, 4 m, 17 March 1983, coll. N.L. Bruce, J.R. Hanley, NTM Cr.009343. 9 spms (5 ovig.♀), stn CP/73, Table Head, 6-8 m, 14 September 1985, coll. P.N. Alderslade, R. Williams, from soft coral *Telesto* sp., NTM Cr.004055. 1 ovig.♀, stn

CP/76, Coral Bay, 6 m, 15 September 1985, coll. P.N. Alderslade, L. Vail, R. Williams, NTM Cr.007626. 1♂, 1 ovig.♀, 1 juv., stn CP/77, Orontes Bay, 10 m, 16 September 1985, coll. R. Williams, on coral *Stylophora pistillata*, NTM Cr.007681. 1 ovig.♀, stn CPV/8, West of Barrow Bay, LWS, 18 September 1985, coll. J.R. Hanley *et al.*, NTM Cr.007650. 7 spms (2 ovig.♀), stn CP/85, Orontes Reef, 10-15 m, 19 September 1985, coll. C. Hood *et al.*, on *Duncanopsammia* sp., NTM Cr.004057. 3 spms, same data as previous, NTM Cr.007613. 2 spms, stn CP/86, Table Head, 8 m, 7 August 1986, coll. C. Johnson *et al.*, on yellow sponge, NTM Cr.004076. 6 juvs, same data as previous, on red sponge, NTM Cr.004079. 1 juv., same data as previous, NTM Cr.004093. 2 juvs, stn CP/93, Coral Bay, 6-8 m, 11 August 1986, coll. R. Williams *et al.*, on coral *Turbinaria* sp., NTM Cr.004129. 25 spms (mainly juveniles), same data as previous, on bright red sponge, NTM Cr.004133. 3 ovig.♀, same data as previous, on blue sponge, NTM Cr.004143. 1 ovig.♀, stn CP/99, Orontes Reef, 11-12 m, 13 August 1985, coll. G. Morgan, A. Hoggett, C. Johnson, on colonial ascidian, NTM Cr.004177.

Remarks. This species not been previously reported in association with Telestacea. The association with an ascidian may have been accidental.

Australian distribution. Northern Territory: East Point, Darwin (Bruce 1988b). Queensland: Heron Island. Western Australia: North West Cape.

Further distribution. Type locality: South Nilandu Atoll, Maldive Islands. Also known from Aden; Kenya; Zanzibar; Tanganyika; Madagascar; Sri Lanka; Andaman Islands; Singapore; Philippines and New Caledonia.

Periclimenes indicus (Kemp)
(Fig. 10b)

Urocaris indica Kemp, 1915: 275-279, fig. 26, pl. 13, fig. 9.

Periclimenes (Periclimenes) indicus - Kemp 1922: 144, fig. 13.

Material examined. 3 spms, stn CP/10, Black Point, 1-2 m, 18 July 1981, coll. A.J. Bruce, J.N.A. Hooper, from seaweed *Sargassum* sp. washings, NTM Cr.001197. 12 spms, stn CP/13, Coral Bay, 0.5 m, 20 July 1981, coll. A.J. Bruce, J.N.A. Hooper, from *Sargassum* sp. washings, NTM Cr.006496. 2 spms, stn CP/18, Midjari Point, Trepang Bay, LWS, 16 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.008241.5 spms (2 ovig.♀), stn CP/58, Caiman Creek, <1 m, 15 May 1983, coll. N.L. Bruce, A.J. Bruce, NTM Cr.009285.

Australian distribution. Northern Territory: not previously reported. Queensland: Moreton Bay.

Further distribution. Type locality: Chilka Lake, India. Also known from Madras and Gulf of Manaar, India; Nicobar Islands; Malaya; Singapore and Sulawesi, Indonesia.

Periclimenes kempi Bruce

Periclimenes kempi Bruce, 1969: 260-261; - Bruce 1988b: 229.

Material examined. 1♀, stn CP/2, Kennedy Bay, 2 m, 22 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on soft coral *Dendronephthya* sp., NTM Cr.008556. 1 spm., stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on coral *Acropora* sp., NTM Cr.008535. 1 ovig.♀, same data as previous, on yellow alcyonarian, NTM Cr.008555. 13 spms (1 ovig.♀) (2 spms with hemiarthrinid bopyrids), stn CP/37, Table Head, 1-3 m, 3 May 1982, coll. P.N. Alderslade, on soft coral *Nepthya* sp., NTM Cr.000305. 1 spm., same data as previous, coll. H.K. Larson, on soft coral *Stereonephthya* sp., NTM Cr.002936. 2 spms, stn CP/38, Table Head, 2-4 m, 4 May 1982, coll. H.K. Larson, on soft coral *Sinularia polydactyla*, NTM Cr.001970.

Australian distribution. Northern Territory: East Point, Darwin (Bruce 1988b). Queensland: Broadhurst Reef, Heron Island.

Further distribution. Type locality: Ghardaqa, Egypt. Also known from Kenya; Zanzibar; Singapore; Philippines; Fijian and Caroline Islands.

Periclimenes lutescens (Dana)

Harpilius lutescens Dana, 1852: 25.

Periclimenes (Ancylocaris) amamiensis - Kubo 1940a: 44-46, figs 11-12.

Periclimenes (Harpilius) lutescens - Holthuis 1952: 88-91, fig. 35.

Material examined. 2 spms (1 ovig.♀), stn CP/2, Kennedy Bay, 2 m, 22 June 1981, coll. P. Horner, J.N.A. Hooper, A.J. Bruce, on coral *Acropora* sp., NTM Cr.000096. 5 spms, stn CP/20, Walford Point, Coral Bay, LWS, 17 October

1981, coll. A.J. Bruce *et al.*, on *Acropora* sp., NTM Cr.001947. 1♂, stn NY/9, Oxley Island, LWS, 20 October 1982, coll. A.J. Bruce, NTM Cr.009316. 2 spms, stn CP/51, Table Head, 4 m, 13 May 1983, coll. N.L. Bruce, on *Acropora* sp., NTM Cr.010482. 1 spm., stn CP/61, Coral Bay, 4 m, 17 May 1983, coll. N.L. Bruce, J.R. Hanley, on *Acropora* sp., NTM Cr.010521. 1 ovig.♀, stn CP/69, Table Head, 1-4 m, 12 September 1985, coll. J.E.N. Veron, J.N.A. Hooper, on *Acropora* sp., NTM Cr.007551.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island, Capricorn Islands; Gillet Cay, Swain Reefs.

Further distribution. Type locality: Tongatabu, Cook Islands. Also known from the Red Sea; Kenya; Zanzibar; Tanganyika; Comoro Islands; Seychelle Islands; Madagascar; Maldive Islands; Indonesia; Japan; Singapore; Vietnam; Solomon Islands and Samoan Islands.

Periclimenes madreporae Bruce

Periclimenes madreporae Bruce, 1969: 262-263.

Allopontonia iaini - Lowry and Springthorpe 1992: 128.

Material examined. 1 ovig.♀, stn NY/8, Oxley Island, LWS, 19 October 1982, coll. A.J. Bruce, on coral *Goniopora* sp., NTM Cr.006361.

Remarks. The specimens referred to *Allopontonia iaini* from Elizabeth and Middleton Reefs, Coral Sea (Lowry and Springthorpe 1992), have been re-examined, with those specimens from coral hosts found to belong to *P. madreporae*.

Australian distribution. Type locality: Erskine Island, Capricorn Islands, Queensland. Northern Territory: not previously recorded. Queensland: One Tree Island, Heron Island, Willis Island, Bet Reef, Restoration Rock, Coral Sea, Elizabeth and Middleton Reefs.

Further distribution. La Réunion; Solomon Islands and Caroline Islands (?).

Periclimenes magnificus Bruce

Periclimenes magnificus Bruce, 1979a: 195-207, figs 1-5, pls a-c.

Material examined. 2 spms, stn NY/10, Oxley Island, 14 m, 21 October 1982, coll. A.J. Bruce *et al.*, on cerianthid anemone, NTM Cr.000387. 1♂, same data as previous, NTM Cr.007726. 2♂, 1♀, 1 juv., same data as previous, NTM Cr.007727. 1♂, same data as previous, NTM Cr.007728. 1 spm., same data as previous, NTM Cr.007733. 1 spm., stn CP/78, Orontes Reef, 19 m, 16 September 1985, coll. R. Williams, on anemone *Cerianthus* sp., NTM Cr.006346. 1♀, stn CP/80, Orontes Reef, 10 m, 17 September 1985, coll. J.E.N. Veron, R. Williams, on *Cerianthus* sp., NTM Cr.006343.

Australian distribution. Type locality: Wistari Reef, Heron Island, Queensland. Northern Territory: not previously recorded. Queensland: Low Isles.

Further distribution. Reported also from the Ryukyu Islands; Lesser Sunda Islands; Indonesia and Cebu, Philippines.

Periclimenes mahei Bruce

Periclimenes mahei Bruce, 1969: 263-264.

Material examined. 1 spm., stn CP/5, Coral Bay, 2-3 m, 23 June 1981, coll. A.J. Bruce, J.N.A. Hooper, P. Horner, on coral *Acropora* sp., NTM Cr.008550.

Australian distribution. Northern Territory: not previously recorded. Western Australia: Point Quobba.

Further distribution. Type locality: Northwest Bay, Mahé, Seychelle Islands. Otherwise recorded only from Zanzibar; Comoro Islands and Amirante Islands.

Periclimenes nilandensis Borradaile

Periclimenes (Falciger) nilandensis Borradaile, 1915: 211; 1917: 372, pl. 54, fig. 13.

Periclimenes (Harpilius) nilandensis - Holthuis 1952: 58-60, fig. 22.

Material examined. 1 ovig.♀, stn CP/14, Burford Island, LWS, 13 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.003191.

Australian distribution. Northern Territory: not previously recorded. Queensland: Wistari Reef, Capricorn Islands.

Further distribution. Type locality: South Nilandu Atoll, Maldive Islands. Also known from Zanzibar; Kenya; Madagascar; Indonesia; South China Sea and New Caledonia.

Periclimenes novaecaledoniae Bruce

Periclimenes novaecaledoniae Bruce, 1968: 1157-1165, figs 6-9.

Material examined. 1♂, 1 ovig.♀, stn CP/78, Orontes Reef, 19 m, 16 September 1985, coll. L.

Vail, on crinoid *Lamprometra klunzingeri*, NTM Cr.007620.

Remarks. The association with the crinoid *Lamprometra klunzingeri* represents a new host record, as the type material was associated with the crinoid *Tropiometra afra*.

Australian distribution. Northern Territory: not previously recorded. New to Australian fauna.

Further distribution. Type locality: Ilôt Maitre, Nouméa, New Caledonia. Otherwise reported only from Madagascar (?).

Periclimenes obscurus Kemp

Periclimenes (Periclimenes) obscurus Kemp, 1922: 144-146, figs 14-15; - Bruce 1988b: 229.

Material examined. 1 spm., stn CP/73, Table Head, 6-8 m, 14 September 1985, coll. C. Hood *et al.*, on soft coral *Telesto* sp., NTM Cr.007624. 1 ovig.♀, stn CP/77, Orontes Bay, 10 m, 16 September 1985, coll. R. Williams, from coral *Seriatopora hystrix*, NTM Cr.007630. 1 spm., stn CPV/8, West of Barrow Bay, LWS, 18 September 1985, coll J.R. Hanley *et al.*, NTM Cr.007647.

Australian distribution. Northern Territory: East Point, Darwin (Bruce 1988b). Queensland: Moreton Bay.

Further distribution. Type locality: Ennur Backwater, Madras Harbour, India. Also recorded from Kuwait; Kenya; Zanzibar; Tanganyika and Madagascar.

Periclimenes seychellensis Borradaile

Periclimenes (Falciger) seychellensis Borradaile, 1915: 212; 1917: 374, pls. 55-55, fig. 14.

Periclimenes (Harpilius) seychellensis - Holthuis 1952: 66-67, fig. 25.

Material examined. 1 spm., stn CP/10, Black Point, 1-2 m, 18 July 1981, coll. A.J. Bruce, J.N.A. Hooper, in seaweed *Sargassum* sp. washings, NTM Cr.001196. 1 spm., stn CP/13, Coral Bay, 0.5 m, 20 July 1981, coll. A.J. Bruce, J.N.A. Hooper, NTM Cr.010264. 1 ovig.♀, stn CP/34, Danger Point, Port Bremer, 2 m, 1 May 1982, coll. J.R. Hanley, R. Williams, NTM Cr.009334. 1 ovig.♀, stn NY/8, Oxley Island, LWS, 19 October 1982, coll. J. Robinson, A.J. Bruce, NTM Cr.007772.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island.

Further distribution. Type locality: Praslin, Seychelle Islands. Also known from Kenya; Zanzibar; Tanganyika; Moçambique; Madagascar; Pakistan; South India; Singapore; Lesser Sunda Islands; Indonesia and New Caledonia.

Periclimenes sinensis Bruce
(Figs 12b, c)

Periclimenes sinensis Bruce, 1969: 270-272; 1982: 255-258, figs 13-14.

Material examined. 1 ovig.♀, stn NY/3, New Year Island, 16 m, 14 October 1982, coll. P. Horner *et al.*, NTM Cr.007779. 1 ovig.♀, stn CP/43, Table Head, 2-4.5 m, 11 May 1983, on soft coral *Dendronephthya* sp., NTM Cr.009660.

Remarks. The type specimens were found in association with the alcyonarian *Morchellana planoregularis* (Burchardt). The ovigerous female (NTM Cr.009660) has a rostral dentition of 9/2. The fourth thoracic sternite is broad with a well developed transverse posterior ridge with a pair of small acute submedian teeth separated by a deep notch. A similar, less well developed ridge is present on the fifth sternite. The basis and coxa have only small setose ventromedial lobes. The single second pereiopod is robust. The dactyl has a single acute recurved tooth proximally, the fixed finger has proximal series of four teeth, the first three rounded and the fourth acute, on a central cutting edge that descends proximally into a fossa flanked by medial and lateral edges.

Australian distribution. Not previously recorded from Australian waters.

Further distribution. Type locality: Hong Kong. Also known only from Japan and Philippines.

Periclimenes soror Nobili

Periclimenes soror Nobili, 1904: 232; - Bruce 1978a: 299-396, figs 1-6.

Periclimenes (Periclimenes) soror - Holthuis 1952: 51-53, fig. 17.

Material examined. 1 ovig.♀, stn NY/2, New Year Island, 10 m, 14 October 1982, coll. A.J. Bruce, on crown-of-thorns starfish *Acanthaster planci*, NTM Cr.009314. 1♂, 2 ovig.♀, stn NY/3, New Year Island, 16 m, 14 October 1982, coll. P. Horner *et al.*, on *Acanthaster planci*, NTM Cr.007778.

Remarks. Both lots of specimens were obtained from *Acanthaster planci* (L.). Colour patterns not recorded.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron

Island. New South Wales: Jervis Bay, Cutawong. Western Australia: Exmouth (Gulf?), Dampier Archipelago.

Further distribution. Type locality: Jibouti. Also known from the Red Sea; Kenya; Zanzibar; Tanganyika; Madagascar; Comoro Islands; Seychelle Islands; Chagos Islands; Hong Kong; Indonesia; Philippines; Sabah; Japan; Ryukyu Islands; Caroline Islands; Marshall Islands; Marianas Islands; Solomon Islands, New Cal-

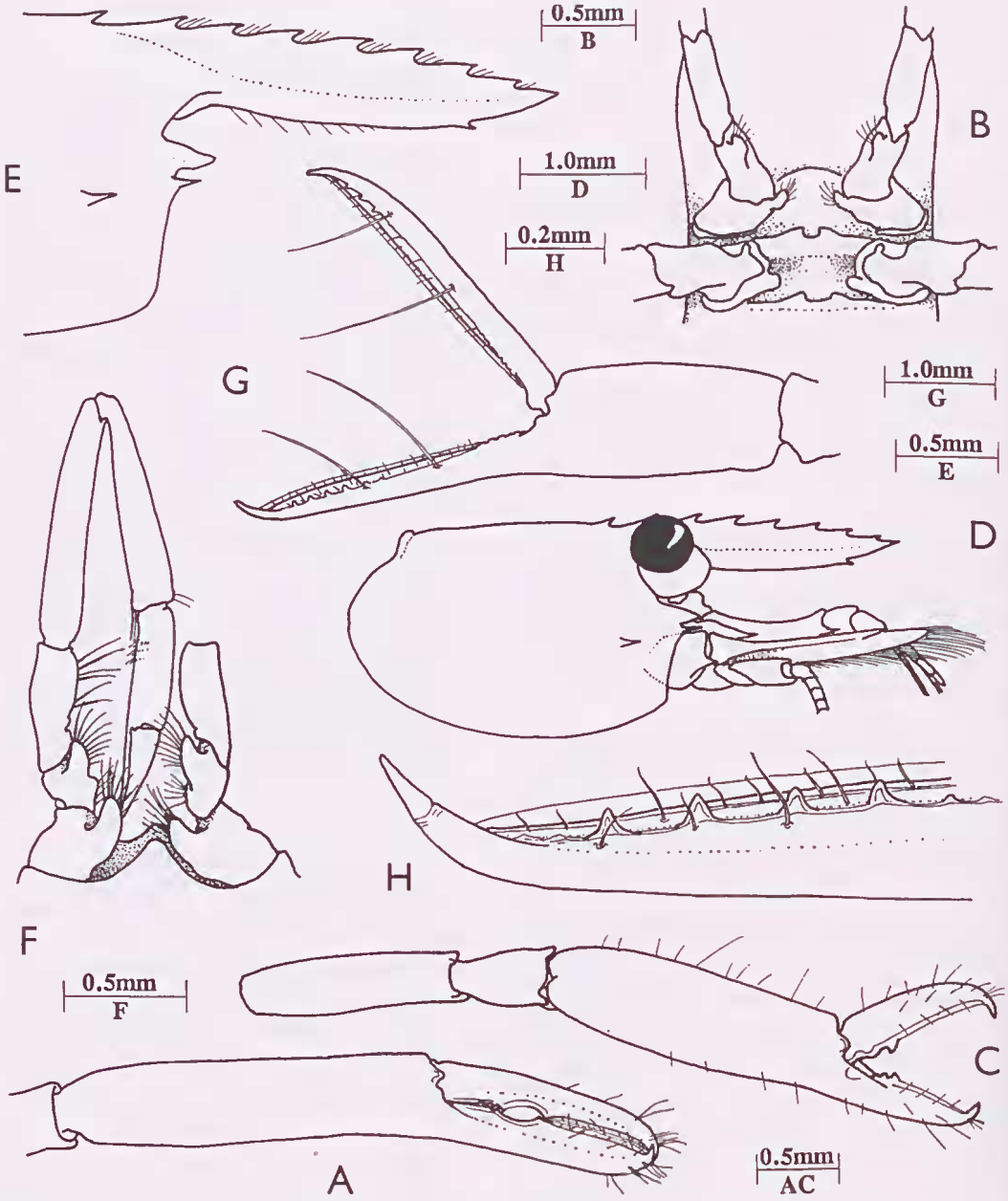

Fig. 12. *Periclimenes anacanthus* Bruce, ovigerous female. **A**, chela of major second pereiopod. *Periclimenes sinensis* Bruce, ovigerous female. **B**, anterior thoracic sternites; **C**, right second pereiopod. *Periclimenes toloensis* Bruce, ovigerous female. **D**, carapace, rostrum and antennal peduncles; **E**, anterior carapace and rostrum; **F**, fourth thoracic stemite and first pereiopod, third thoracic stemite shaded. *Anchistioides willeyi* (Borradaile), female. **G**, chela of second pereiopod; **H**, same, distal part of fixed finger.

edonia; Fijian Islands; Society Islands; Tuamotu Islands and Hawaiian Islands. Also recorded in the Eastern Pacific Region from the Gulf of California, Panama and Colombia.

Periclimenes tenuipes Borradaile

Periclimenes tenuipes Borradaile, 1898:384; - Bruce 1983a: 42-43; 1987a: 35; 1988b: 229.

Periclimenes (Ancylocaris) tenuipes - Kemp 1922: 195-196.

Periclimenes (Harpilius) tenuipes - Holthuis 1952: 84-85.

Material examined. 1♂, 1 juv., stn CP/17, Wanaray Point, Trepang Bay, LWS, 15 October 1981, coll. A.J. Bruce, P. Horner, NTM Cr.008707. 1♂, same data as previous, NTM Cr.008716. 1♂, 1 ovig.♀, same data as previous, NTM Cr.008718. 1 ovig.♀, stn CP/18, Midjari Point, Trepang Bay, LWS, 16 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.007582. 2 spms, same data as previous, NTM Cr.007587. 1 spm., same data as previous, NTM Cr.008243. 1 spm., stn CP/20, Walford Point, Coral Bay, LWS, 17 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.002662. 1 spm., stn CP/38, Table Head, 2-4 m, 4 May 1982, coll. J.R. Hanley *et al.*, NTM Cr.000258. 2 spms, same data as previous, NTM Cr.001961. 1 spm., stn CP/62, Coral Bay, 4 m, 17 May 1983, coll. N.L. Bruce, J.R. Hanley, NTM Cr.010255.

Australian distribution. Northern Territory: East Point, Darwin; Darwin Harbour (Bruce 1983a, 1988b). Queensland: Wistari Reef, Capricorn Islands.

Further distribution. Type locality: Ralun, New Britain. Also recorded from the Red Sea; Kenya; Zanzibar; Madagascar; Seychelle Islands; Maldive Islands; Lakshadweep; Sri Lanka; Andaman Islands; Indonesia; Philippines; Ryukyu Islands; Caroline and Marshall Islands.

Periclimenes toloensis Bruce
(Figs 12d, f)

Periclimenes toloensis Bruce, 1969: 273-275; 1982: 258-264, figs 15-18; 1988b: 229-239.

Material examined. 1 spm., stn CP/17, Wanaray Point, Trepang Bay, LWS, 15 October 1981, coll. A.J. Bruce, P. Horner, NTM Cr.008733. 9 spms, stn CP/26, Sandy Island No. 2, 7 m, 20 October 1981, P.N. Alderslade, J.N.A. Hooper, NTM Cr.008590. 1♂, stn CP/27, Sandy Island No. 2, 10 m, 21 October 1981, coll. J.N.A. Hooper *et al.*, on unidentified hydroid, NTM Cr.000159. 5 spms, stn CP/28, Sandy Island No. 2, 6-7 m, 22 October 1981, coll. J.R. Hanley, on unidentified algae, NTM Cr.003186. 9 spms, same data as previous, on unidentified hydroid, NTM Cr.003187. 3 spms, stn CP/37, Table Head, 1-3 m, 3 May 1982, coll. H.K. Larson, on whip coral *Junceella* sp., NTM Cr.002937. 2 spms, same data as previous, NTM Cr.002941. 2 spms, same data as previous, on soft coral *Stereonephthya* sp., NTM Cr.002957. 6 spms, stn CP/38, Table Head, 2-4 m, 4 May 1982, coll H.K. Larson *et al.*, on soft coral *Sinularia polydactyla*, NTM Cr. 001971. 6 spms, same data as previous, on soft coral *Neospongodes* sp., NTM Cr.001973. 5 spms, same data as previous, on *Neospongodes* sp., NTM Cr.001974. 1♂, 1♀, stn NY/4, McCluer Island, 7 m, 16 October 1982, coll. A.J. Bruce, NTM Cr.009275. 46 spms (7 ovig.♀), stn NY/8, Oxley Island, LWS, 19 October 1982, coll. J. Robinson, A.J. Bruce, NTM Cr.007771. 12 spms (2 ovig.♀), stn NY/9, Oxley Island, LWS, 20 October 1982, coll. A.J. Bruce, NTM Cr.009289. 7 spms (3 ovig.♀), stn CP/44, Table Head, 4-5 m, 11 May 1983, coll. N.L. Bruce, D. Staples, on whip coral *Junceella* sp., NTM Cr.009349. 1♀, same data as previous, bopyridized, NTM Cr.009354. 4 spms (1 ovig.♀), stn CP/46, off Table Head, 5 m, 12 May 1983, coll. N.L. Bruce, NTM Cr.009340. 1♂, same data as previous, NTM Cr.009341. 1 ovig.♀, same data as previous, NTM Cr.009342. 30 spms (17 ovig.♀), same data as previous, NTM Cr.009351. 18 spms, same data as previous, NTM Cr.009352. 14 spms (1 ovig.♀), same data as previous, NTM Cr.009355. 6 spms (1 spm. bopyridized), same data as previous, NTM Cr.009357. 16 spms, same data as previous, NTM Cr.009358. 1♀, 1 ovig.♀, stn CP/68, Coral Bay, 2-3 m, 19 May 1983, coll. N.L. Bruce, J.R. Hanley, NTM Cr.009284. 110 spms (43 ovig.♀), stn CP/73, Table Head, 6-8 m, 14 September 1985, coll. C. Hood, on hydroid *Lytocarpus philippinensis*, 2 spms with hemiarthrinid bopyrids (Cr.004218), NTM Cr.004217. 1 spm., stn CP/78, Orontes Reef, 19 m, 16 September 1985, coll. R. Williams, on soft coral *Dendronephthya* sp., NTM Cr.007553. 9 ovig.♀, stn CPV/8, West of Barrow Bay, LWS, 18 September 1985, coll J.R. Hanley, M. Burke, on unidentified soft coral, NTM Cr.007651. 12 spms, stn CP/85, Orontes Reef, 10-15 m, 19 September 1985, coll. L. Vail, C. Hood, R. Williams, on coral *Duncanopsammia* sp., NTM

Cr.007612. 54 spms, stn CP/86, Table Head, 8 m, 7 August 1986, coll. C. Johnson *et al.*, on unidentified gorgonian, NTM Cr.004090. 8 spms, same data as previous, on *Lytocarpus philippinensis*, NTM Cr.004091. 39 spms (14 ovig.♀, one bopyridized), same data as previous, on *Lytocarpus philippinensis*, NTM Cr.004092. 24 spms (3 ovig.♀), same data as previous, on *Lytocarpus philippinensis*, NTM Cr.004180.

Remarks. The specimens agree well with the original description of Hong Kong material. The rostrum is slightly deeper, with the ventral border slightly more convex. The coxa of the first pereiopod bears a large setose ventromedial lobe and a similar smaller lobe is present on the basis. The fourth thoracic sternite has a large transverse triangular median tooth posteriorly. The third sternite has a smaller similar lobe and the fifth a transverse ridge with small submedian teeth.

Australian distribution. Northern Territory: East Point, Darwin (Bruce 1988b). Queensland: Wistari Reef, Capricorn Islands.

Further distribution. Type locality: Ap Chau, Hong Kong. Also known only from Zanzibar and the Philippines.

Periclimenes venustus Bruce

Periclimenes venustus Bruce, 1990a: 230-240, figs 1-6, 7a, 8a; 1990b: 12.

Material examined. 1♀, stn CP/44, Table Head, 4-5 m, 11 May 1983, coll. N.L. Bruce, D. Staples, NTM Cr.009344. 1 ovig.♀, paratype, stn CP/64, Coral Bay, 3-4 m, 18 May 1983, coll. N.L. Bruce, on coral *Heliofungia actiniformis*, NTM Cr.000447. 2♂, 1♀, stn CP/71, Coral Bay, 2-5 m, 13 September 1985, coll. J.E.N. Veron, on *Heliofungia actiniformis*, NTM Cr.003224. 1♂, 1 ovig.♀, stn CP/72, Table Head, 3 m, 13 September 1985, coll. C. Hood, on unidentified anemone, NTM Cr.003228. 3 spms, stn CP/74, Berkeley Bay, 3 m, 14 September 1985, coll. C. Hood, J.E.N. Veron, on unidentified anemone, NTM Cr.003229. 6 spms (1 ovig.♀), same data as previous, on coral *Heliofungia* sp., NTM Cr.003230. 1♂, 1 ovig.♀, 1 juv., stn CP/76, Coral Bay, 6 m, 15 September 1985, coll L. Vail, R. Williams, J.E.N. Veron, NTM Cr.006340. 1♀, stn CP/81, off Turtle Point, Kennedy Bay, 2-5 m, 17 September 1985, coll. C. Hood, on unidentified anemone, NTM Cr.006341. 2♀, stn CP/82, Coral Bay, 5-6 m, 18 September 1985, coll. P.N. Alderslade, R. Williams, on *Heliofungia actiniformis*, NTM Cr.006342. 1♀, 1 ovig.♀, same data as previous, NTM Cr.006345. 1 spm., same data as previous, NTM Cr.006353. 1 spm., on unidentified anemone, NTM Cr.006354. 1 spm., same data as previous, on *Heliofungia actiniformis*, NTM Cr.006355. 4 spms paratypes, same data as previous, NTM Cr.006356. 5 spms paratypes, same data as previous, on unidentified anemone, NTM Cr.006357. 1 ovig.♀ Holotype, stn CP/97, Coral Bay, 12 August 1986, coll. C. Johnson, on unidentified anemone, NTM Cr.004169. 1 spm., stn CP/98, Coral Bay, 13 August 1986, coll. C. Johnson, P. Davie, NTM Cr.004170 (specimen destroyed).

Australian distribution. Type locality: Coral Bay, Port Essington, Northern Territory (Bruce 1990a). Western Australia: Scott Reef; Abrolhos Islands.

Further distribution. So far reported only from the Philippines and Japan.

Periclimenes zanzibaricus Bruce

Periclimenes zanzibaricus Bruce, 1969: 62-72, figs 26-29.

Material examined. 6 spms (2 ovig.♀), stn CP/64, Walford Point, Coral Bay, 3-4 m, 18 May 1983, coll. N.L. Bruce, on sea urchin *Diadema setosum*, NTM Cr.000444.

Australian distribution. Northern Territory: not previously recorded. Western Australia: Geraldton.

Further distribution. Type locality: Mtoni, Zanzibar. Also known from Kenya and the Seychelle Islands.

Philarius gerlachei (Nobili)

Harpilius Gerlachei Nobili, 1905: 160; 1906: 45, pl. 4, fig. 10.

Philarius gerlachei - Holthuis 1952: 152-153, fig. 69.

Material examined. 1 juv., stn CP/33, Port Bremer, 6 m, 1 May 1982, coll. J.N.A. Hooper, P.N. Alderslade, NTM Cr.009318. 1 ovig.♀, stn NY/4, McCluer Island, 7 m, 16 October 1982, coll. A.J. Bruce, NTM Cr.009278. 1♂, stn CP/82, Coral Bay, 5-6 m, 18 September 1985, coll. P.N. Alderslade, R. Williams, on coral *Acropora* sp., NTM Cr.007579. 1♂, 1 ovig.♀, same data as previous, on *Acropora digitifera*, NTM Cr.007609. 1 ovig.♀, same data as previous, on *Acropora* sp., NTM Cr.010549. 1♂, 1♀, stn CP/88, Orontes Reef, 8-10 m, 9 August 1986, coll. R.C. Willan, C. Johnson, on *Acropora* sp., NTM Cr.004101.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island; One Tree Island; Diamond Islet, Willis Island; Restoration Rock.

Further distribution. Type locality: Arzana Island, Persian Gulf. Also known from the Red Sea; Oman; Kenya; Zanzibar; Tanganyika; Moçambique Channel; Comoro Islands; Seychelle Islands; La Réunion; Gulf of Manaar; Indonesia; Philippines; Ryukyu Islands; Marshall Islands; Solomon Islands; Fijian Islands; Kiribati and Samoan Islands.

Philarius imperialis (Kubo)

Harpilius imperialis Kubo, 1940b: 1-4, figs 1-3.

Philarius imperialis - Holthuis 1952: 125; - Bruce 1983a: 45.

Material examined. 1♂, 1♀, stn CP/20, Walford Point, Coral Bay, LWS, 17 October 1981, coll. A.J. Bruce *et al.*, NTM Cr.000132. 2 spms, stn CP/40, Orontes Reef, 3 m, 5 May 1982, coll. A.J. Bruce, on coral *Acropora* sp., NTM Cr.000281. 1 spm., same data as previous, coll. H.K. Larson, NTM Cr.001237. 1♂, 1 ovig.♀, stn CP/61, Coral Bay, 4 m, 17 May 1983, coll. N.L. Bruce, J.R. Hanley, on *Acropora* sp., NTM Cr.010516. 2 spms, stn CP/64, Walford Point, Coral Bay, 3-4 m, 18 May 1983, coll. N.L. Bruce, on *Acropora* sp., NTM Cr.010245. 1 ovig.♀, stn CP/81, off Turtle Point, Kennedy Bay, 2-5 m, 17 September 1985, coll. C. Hood, on *Acropora millepora*, NTM Cr.007581. 1♂, stn CP/95, Coral Bay, 5-6 m, 12 August 1986, coll. P. Davie *et al.*, on *Acropora* sp., NTM Cr.004153.

Remarks. The specimens NTM Cr.000132 and NTM Cr.010516 were found in association with *Periclimenes lutescens* specimens.

Australian distribution. Northern Territory: Coral Bay, Port Essington (Bruce 1983a). Queensland: Heron Island, Restoration Rock.

Further distribution. Type locality: Bonin Island. Also recorded from the Red Sea; Kenya; Zanzibar; Tanganyika; La Réunion; Singapore; Indonesia; Caroline Islands and Marshall Islands.

Typton dentatus Fujino and Miyake

Typton dentatus Fujino and Miyake, 1969b: 80-84, figs 1-2.

Material examined. 1♂, 1♀, stn CP/64, Walford Point, Coral Bay, 3-4 m, 18 May 1983, coll. N.L. Bruce, NTM Cr.009286.

Remarks. The specimens were collected from smashed coral rubble, presumably from a sponge host.

Australian distribution. Northern Territory: not previously recorded. Queensland: Heron Island.

Further distribution. Type locality: Yoronjima, Ryukyu Islands. No other records.

Anchistioididae Gurney, 1938

Anchistioides willeyi (Borradaile) (Figs 12g, h)

Palaemonopsis willeyi Borradaile, 1899:410, pls 36-37, fig. 7.

Amphipalaemon willeyi - Nobili 1901: 5.

Anchistioides willeyi - Gordon 1935: 345, figs 23a, 24a; - Bruce 1978b: 286-287, fig. 44; 1988b: 227; 1991: 269-272, figs 3g, 29-30.

Material examined. 2 juv., stn HL82-60, New Year Island, surface, night-light, 13 October 1982, coll. H.K. Larson, NTM Cr.000322. 1♂, stn HL82-73, Oxley Island, surface, night-light, over 9-10 m, 18 October 1982, coll. H.K. Larson, NTM Cr.000324.

Remarks. The capture of these specimens at surface night-lights represents the first occurrence of this phenomenon in the Indo-West Pacific species of this genus. The new moon occurred on 17 October 1982, so that specimens NTM Cr.000322 were collected three days before the new moon and NTM Cr.000324, one day after. This occurrence, in the case of *Anchistioides antiguensis* (Schmitt) in the Caribbean region, has been documented in detail by Wheeler and Brown (1936). Swarming was reported to occur shortly after sunset at the time of the new moon. At that time the normal association of *Anchistioides* species with sponge hosts was not known (there still appear to be no confirmed reports of *A. antiguensis* being found in sponges). It is interesting to note that in most of the Bermudan specimens, the females were ovigerous, so that the swarming was not a premating phenomenon. Some of the females captured clearly had ova in the point of eclosion. It has also been reported by Wheeler (1944) that the stomach contents of *A. antiguensis* may contain setae of the polychaete worm *Perinereis melanocephala* M'Intosh and that captive specimens of the shrimps feed readily on the epitokes of *Perinereis*. How the swarming shrimps regain their sponge hosts is a mystery, but their glassy transparency and almost complete lack of

chromatophores may help to expedite their return.

Two specimens (NTM Cr.000322) appear juvenile, with CL 3.9 and 4.8 mm, and have chelae distinctly of the long, slender-fingered type (Bruce 1978b, 1991). The distal teeth, medial to the sharp cutting edge are highly acute, the proximal denticles are rounded. The larger male (NTM Cr.000324), CL 8.1 mm, may be adult and has similar chelae. In both lots, each finger has a pair of very long rigid simple setae, that become erect on the opened fingers, but depressed when the fingers are closed. These appear to be autapomorphic characters, lacking in all other palaemonoid genera. These setae may be correlated with the pelagic feeding habits mentioned above. These features, and the unusual morphology of the mandibles, with the unusual proximal segments of the third maxilliped (Bruce 1991) and particularly the unusual larval morphology (Gurney 1936) suggest that the Anchistioididae are not closely related to the rest of the Palaemonoidea.

Australian distribution. Northern Territory: Darwin Harbour (Bruce 1988b). Also known from Queensland, Heron and One Tree Islands, and from Moreton Bay (Bruce 1983c).

Further distribution. Type locality: Ralun, New Britain. Also recorded from Zanzibar; Tanganyika; Kenya; Madagascar; Maldive Islands;

TABLE 3. Comparison of Cobourg Peninsula and Singapore pontoniine faunae. Species recorded only from the Cobourg Peninsula or Singapore are indicated by •.

	Taxon	Cobourg Peninsula	Singapore	Host
Palaemoninae	*Exopalaemon stylifera* (H. Milne Edwards 1840)	–	+	–
	Leander tenuicornis (Say, 1818)	–	+	–
	Leandrites celebensis (De Man, 1811)	–	+	–
	Leandrites deschampsii (Nobili, 1903)	–	+	–
	Leandrites stenopus Holthuis, 1950	–	+	–
	Leptocarpus potamiscus (Kemp, 1917)	–	+	–
	Palaemon concinnus Dana, 1852	–	+	–
	Palaemon debilis (Dana, 1852)	–	+	–
	Palaemon semmelinckii (De Man, 1881)	+	+	–
	Palaemon serrifer (Stimpson, 1860)	+	+	–
	Urocaridella antonbruunii (Bruce, 1967)	+	+	(fish - cleaner)
	Urocaridella urocaridella (Holthuis, 1950)	–	+	–
	Urocaridella sp.	+	–	(fish - cleaner)
Pontoniinae	*Anapontonia denticauda* Bruce, 1967	–	+	Scleractinia: Oculinidae
	Anchistus australis Bruce, 1977	+	–	Bivalve mollusca
	Anchistus custos (Forsskål, 1775)	+	+	Bivalve mollusca: Pinnidae
	Anchistus miersi (De Man, 1888)	–	+	Bivalve mollusca: Tridacnidae
	Chernocaris placunae Johnson, 1967	+	+	Bivalve mollusca: Placunidae
	Conchodytes monodactylus Holthuis, 1952	+	+	Bivalve mollusca: Pinnidae
	Coralliocaris graminea (Dana, 1852)	+	+	Scleractinia: Acroporidae
	Coralliocaris viridis Bruce, 1974	+	–	Scleractinia: Acroporidae
	Dasella ansoni Bruce, 1983	•	–	Tunicata
	Hamodactylus boschmai Holthuis, 1952	+	+	–
	Hamodactylus noumeae Bruce, 1970	+	–	–
	Hamopontonia corallicola Bruce, 1970	+	–	Scleractinia: Actinaria
	Hamopontonia essingtoni Bruce, 1987	•	–	Scleractinia: Pocilloporidae
	Harpiliopsis beaupresii (Audouin, 1852)	+	+	Scleractinia: Pocilloporidae
	Ischnopontonia lophos (Barnard, 1962)	+	–	Scleractinia: Oculinidae
	Onycocaris quadratophthalma (Balss, 1921)	+	–	Porifera
	Palaemonella pottsi (Borradaile, 1915)	+	+	Crinoidea
	Palaemonella rotumana (Borradaile, 1898)	+	+	–
	Palaemonella spinulata Yokoya, 1935	+	–	–
	Periclimenaeus arabicus (Calman, 1939)	+	–	Porifera
	Periclimenaeus orontes Bruce, 1989	•	–	Porifera
	Periclimenaeus serrula sp. nov.	•	–	Porifera
	Periclimenaeus solitus sp. nov.	•	–	Porifera
	Periclimenaeus stylirostris Bruce, 1969	+	–	Porifera
	Periclimenaeus tridentatus (Miers, 1844)	+	+	Tunicata
	Periclimenella spinifera (De Man, 1902)	+	–	–
	Periclimenes affinis (Zehntner, 1894)	+	–	Crinoidea
	Periclimenes akiensis Kubo, 1936	–	+	–

Singapore; Borneo Bank; Indonesia; South China Sea; Philippines, and New Caledonia.

DISCUSSION

The collection of over 1500 specimens of palaemonoid shrimp from the Cobourg Peninsula region provides some interesting data on the relative abundance of some of the commensal species, although collections were made only on a quanlitative basis. The commensal species collected greatly outnumber the 'free-living' species, and illustrate the density with which some species can occur. Thus, the most abundant 'free-living' species was the ubiquitous *Palaemonella rotumana* (52 spms), which has often been noted as one of the most common and most widely distributed pontoniine species, occurring throughout most of the Indo-West Pacific region and now also occurring in the eastern Mediterranean Sea, while also extending to a depth of 126-128m (Bruce 1970c). These specimens were almost invariably collected in lots of 1-2 specimens only. Specimens of this species were caught, in many cases almost accidentally, in the search for other species, as well as from rotenone stations. The total numbers of the commensal species naturally depend upon the number of potential hosts examined. Numbers per host vary considerably, with one male

TABLE 3 (cont.). Comparison of Cobourg Peninsula and Singapore pontoniine faunae. Species recorded only from the Cobourg Peninsula or Singapore are indicated by •.

	Taxon	Cobourg Peninsula	Singapore	Host
Pontoniinae (cont.)	*Periclimenes alegrias* Bruce, 1987	•	–	Crinoidea
	Periclimenes amymone De Man, 1902	+	+	Scleractinia
	Periclimenes anacanthus Bruce, 1989	+	–	–
	Periclimenes brevicarpalis (Schenkel, 1902)	+	+	Actinaria
	Periclimenes cobourgi sp. nov.	•	–	Scleractinia
	Periclimenes commensalis Borradaile, 1915	+	–	Crinoidea
	Periclimenes cristimanus Bruce, 1965	–	+	Echinoidea
	Periclimenes digitalis Kemp, 1922	–	+	–
	Periclimenes diversipes Kemp, 1922	+	+	Scleractinia
	Periclimenes elegans (Paulson, 1875)	+	+	–
	Periclimenes galene (Holthuis, 1952)	+	–	Hydroida
	Periclimenes grandis (Stimpson, 1860)	+	+	–
	Periclimenes holthiusi Bruce, 1969	+	+	Actinaria: Scleractinia
	Periclimenes incertus Borradaile, 1915	+	+	–
	Periclimenes indicus (Kemp, 1915)	+	+	–
	Periclimenes investigatoris Kemp, 1922	–	+	–
	Periclimenes johnsoni Bruce, 1987	–	•	–
	Periclimenes kempi Bruce, 1969	+	+	Alcyonacea
	Periclimenes lanipes Kemp, 1922	–	+	Ophiuroidea
	Periclimenes lutescens (Dana, 1852)	+	+	Scleractinia
	Periclimenes madreporae (Bruce, 1969)	+	?	–
	Periclimenes magnificus Bruce, 1979	+	–	Scleractinia
	Periclimenes mahei Bruce, 1969	+	–	Scleractinia
	Periclimenes nilandensis Borradaile, 1915	+	–	Gorgonacea
	Periclimenes novaecaledoniae Bruce, 1968	+	–	Crinoidea
	Periclimenes obscurus Kemp, 1922	+	–	–
	Periclimenes parvus Borradaile, 1898	–	+	–
	Periclimenes psamathe (De Man, 1902)	–	+	Gorgonacea
	Periclimenes seychellensis Borradaile, 1915	+	–	–
	Periclimenes sinensis Bruce, 1969	+	–	–
	Periclimenes soror Nobili, 1904	+	–	Asteroidea
	Periclimenes tenuipes Borradaile, 1898	+	–	–
	Periclimenes toloensis Bruce, 1969	+	–	Hydroida
	Periclimenes venustus Bruce, 1990	+	–	Scleractinia
	Periclimenes zanzibaricus Bruce, 1969	+	–	Echinoidea
	Philarius gerlachei (Nobili, 1905)	+	–	Scleractinia
	Philarius imperialis (Kubo, 1940)	+	+	Scleractinia
	Platycaris latirostris Holthuis, 1952	–	+	Scleractinia: Oculinidae
	Typton dentatus Fujino & Miyake, 1969	+	–	Porifera
Anchistioididae	*Anchistioides willeyi* (Borradaile, 1899)	+	+	Porifera
Hymenoceridae	*Phyllognathia ceratophthalma* (Balss, 1913)	–	+	–

and one female being the normal occupancy of bivalve mollusc hosts. This is also normal in tunicate hosts and contrasts strongly with the numbers of specimens found on some coelenterate or sponge hosts. Thus, although most host specimens usually only provided a small number of commensal shrimps, others contained large numbers, such as the 110 specimens of *Periclimenes toloensis* on a single hydroid host, *Lytocarpus philippinensis*. Similarly, one crinoid host provided 64 associated specimens of *Periclimenes affinis*.

Faunistic comparisons with other tropical areas present problems as the protocols of collections differ markedly. Bruce (1981) studied the fauna of Heron Island, Queensland, and recorded well over 100 species of pontoniine shrimp. This study illustrates the results of prolonged study of a small coral reef, lacking many of the major habitats found elsewhere in the tropics. At the other extreme, the station positions of the *Siboga* and *Snellius* expeditions are diffusely spread over much of the Indonesian archipelago, extending into deep-sea waters, and so are not comparable. The best available data for comparison with the Cobourg Peninsula fauna is that provided for Singapore by Johnson (1961, 1976), the results of detailed study over many years of a relatively restricted area, with a wide variety of habitats. A comparison of the faunas of the two localities is presented in the following table.

The two faunas combined, present a faunistic total of 82 palaemonoid species, of which the Cobourg Peninsula has 61 species (74%) and Singapore 45 (55%), with only 24 (29%) occurring in both regions. Further collecting would surely increase all these numbers, as several common Indo-West Pacific species, such as *Jocaste lucina* and *Jocaste japonica* and further *Coralliocaris* spp (such as *Coralliocaris superba*), all common in *Acropora* corals, and *Harpiliopsis depressa* abundant in pocilloporid corals, have not yet been recorded from either region. Although there is a large element of chance in collecting shrimps, the results of surveys will reflect the methods employed. The Singapore fauna contains a number of species probably from trawl-caught samples, e.g. *Urocaridella urocaridella*, *Periclimenes lanipes*, while the Cobourg Peninsula fauna probably lacks some *Anchistus* species, such as *A. demani*, *A. miersi*, because their hosts, *Tridacna* spp, are protected and were not sampled. It should also be noted that sponges, bivalve molluscs and tunicates, all potential shrimp hosts, were also inadequately sampled. Bruce (1981) reported that a well developed coral reef may have over 100 species of pontoniine shrimps alone, although palaemonine shrimps are usually very poorly represented in this biotope. Bruce (1990b) reported the presence of 168 species of pontoniine shrimps in the total Australian fauna. The presence of 55 pontoniine species in the Gurig Marine Park, which accounts for 32% of the Australia fauna, reflects the rich marine fauna present in this area, and is interesting in view of the relatively poor development of its coral reefs. The central waters of Port Essington were not adequately surveyed by trawl or dredge, methods that would certainly have increased the species diversity. The low representation of palaemonine shrimps at Port Essington may be attributed to the lack of any major permanent outflows of freshwater, such as occur in the Singapore region. However, *Leander tenuicornis* and *Leandrites celebensis* do both occur in Northern Territory waters, and so could be found in the Port Essington region in due course.

A short-term study of the caridean fauna of Cartier-Hibernia reefs, off north western Australia, (Bruce 1992) provides some comparative data on the coral reef fauna. The collection included 45 palaemonoid species (Palaemoninae, 2; Pontoniinae, 42; Gnathophyllidae, 1). Of these, only 12 (15%) occur in common with the Cobourg Peninsula material, a marked contrast with the degree of overlap between the Cobourg and the Singapore fauna. The differences between the Cobourg and Cartier-Hibernia reef faunas are attributed to the relatively greater amount of collecting carried out in the Cobourg Peninsula and the greater degree of coral reef development at Cartier-Hibernia reefs.

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REFERENCES

Audouin, V. 1825. Éxplication sommaire des planches de Crustacés de l'Égypte et de la Syrie, publiées par Jules-César Savigny, membre de l'Institute: offrant un exposé des caractères naturelles des genres avec la distinction des espèces. Description de l'Égypte ou receuil des observations et des recherches qui on été faites en Égypte pendant l'expédition de l'armée francaise. *Histoire Naturelle* **1**(4): 77-98.

Balss, H. 1921. Stomatopoda, Macrura, Paguridea und Galatheidea. Results of Dr. E. Mjöbergs Swedish Scientific Expeditions to Australia, 1910-13. XXIX. *Kungliga Svenska Vetenskapsakademiens Handlingar* **61**(10): 1-24.

Barnard, K.H. 1962. New records of marine crustacea from the East African region. *Crustaceana* **3**(1): 239-245.

Borradaile, L.A. 1898. A revision of the Pontoniidae. *Annals and Magazine of Natural History* (7)**2**: 376-391.

Borradaile, L.A. 1899. On the Stomatopoda and Macrura brought by Dr Willey from the South Seas. In: Willey, A., *Zoological results based on material from New Britain, New Guinea, Loyalty Islands and elsewhere, collected during the years 1895, 1896, 1897*. **4**(20): 395-428.

Borradaile, L.A. 1915. Notes on Carides. *Annals and Magazine of Natural History* (8)**15**: 205-213.

Borradaile, L.A. 1917. On the Pontoniinae. The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr J. Stanley Gardiner. *Transactions of the Linnean Society of London, Zoology* (2)**17**: 323-396.

Bruce, A.J. 1966. Notes on some Indo-Pacific Pontoniinae, XI. A re-examination of *Philarius lophos* Barnard, with the designation of a new genus *Ischnopontonia*. *Bulletin of Marine Science* **16**: 584-598.

Bruce, A.J. 1967. Notes on some Indo-Pacific Pontoniinae, III-IX. Descriptions of new genera and species from the Western Indian Ocean and the South China Sea. *Zoologische Verhandlingen, Leiden* **87**: 1-73.

Bruce, A.J. 1968. A report on some pontoniid shrimps from New Caledonia (Crustacea Decapoda Natantia). *Bulletin du Muséum national d'Histoire Naturelle* (2) **39**(6): 1148-1171.

Bruce, A.J. 1969. Preliminary descriptions of sixteen new species of the genus *Periclimenes* Costa, 1844 (Crustacea, Decapoda Natantia, Pontoniinae). *Zoologische Mededelingen, Leiden* **43**(20): 253-278.

Bruce, A.J. 1970a. Notes on some Indo-Pacific Pontoniinae, XV. *Hamopontonia corallicola* gen. nov. sp. nov., a new pontoniid shrimp from Hong Kong. *Crustaceana* **18**(1): 37-48.

Bruce, A.J. 1970b. Report on some commensal pontoniinid shrimps (Crustacea: Palaemonidae) associated with an Indo-Pacific gorgonian host (Coelenterata: Gorgonacea). *Journal of Zoology, London* **160**: 537-544.

Bruce, A.J. 1970c. Observations on the Indo-West Pacific species of the genus *Palaemonella* Dana, 1852 (Decapoda, Pontoniinae). *Crustaceana* **19**(3): 273-287.

Bruce, A.J. 1970d. Further preliminary descriptions of new species of the genus *Periclimenaeus* Borradaile, 1915, (Crustacea, Decapoda, Natantia, Pontoniinae). *Zoologische Mededelingen, Leiden* 44(21): 305-315.

Bruce, A.J. 1972. A report on a collection of pontoniinid shrimps from Fiji, with the description of a new species of *Coralliocaris* Stimpson. *Pacific Science* **26**(1): 63-84.

Bruce, A.J. 1974. *Coralliocaris viridis* sp. nov., a preliminary note (Decapoda, Natantia, Pontoniinae). *Crustaceana* **26**(2): 222-224.

Bruce, A.J. 1976. A report on a small collection of shrimps from the Kenya National Marine Parks at Malindi, with notes on selected species. *Zoologische Verhandelingen Uitgegeven door het Rijksmuseum van Natuurlijke Historie te Leiden* **145**: 1-72.

Bruce, A.J. 1977. Pontoniine shrimps in the collections of the Australian Museum. *Records of the Australian Museum* **31**(2): 39-81.

Bruce, A.J. 1978a. *Periclimenes soror* Nobili, a pontoniine shrimp new to the American fauna, with observations on its Indo-West Pacific distribution. *Tethys* 8(4)(1976): 299-306.

Bruce, A.J. 1978b. A report on a collection of pontoniine shrimps from Madagascar and adjacent seas. *Zoological Journal of the Linnean Society of London* **62**: 205-290.

Bruce, A.J. 1979a. Notes on some Indo-Pacific Pontoniinae, XXXI, *Periclimenes magnificus* sp. nov., a coelenterate associate from the Capricorn Islands (Decapoda, Palaemonidae). *Crustaceana Supplement* **5**: 195-208.

Bruce, A.J. 1979b. The evolution and zoogeography of shallow-water tropical shrimps. *Information Series, Department of Scientific and Industrial Research, New Zealand* **137**: 337-355.

Bruce, A.J. 1980. Shrimps: the complex life relationships of shrimps on the Great Barrier Reef. *Geo* 2(3): 38-53.

Bruce, A.J. 1981. Pontoniine shrimps of Heron Island. *Atoll Research Bulletin* **245**: 1-33.

Bruce, A.J. 1982. The pontoniine shrimp fauna of Hong Kong. In: Morton, B.S. and Tseng, C.K. (eds), *Proceedings of the First International Marine Biological Workshop: The Marine Fauna of Hong Kong and Southern China, Hong Kong,*

1980: 233-284. Hong Kong University Press; Hong Kong.

Bruce, A.J. 1983a. Additions to the marine fauna of the Northern Territory. 1. Decapod Crustacea: Caridea and Stenopodidea. *The Beagle, Occasional Papers of the Northern Territory, Museum of Arts and Sciences* **1**(5): 41-49.

Bruce, A.J. 1983b. A second species of the pontoniine shrimp genus *Dasella* Lebour, *D. ansoni* sp. nov., from the Arafura Sea. *The Beagle, Occasional Papers of the Northern Territory Museum of Arts and Sciences* **1**(3): 21-29.

Bruce, A.J. 1983c. The pontoniine shrimp fauna of Australia. *Australian Museum Memoirs* **18**: 195-218.

Bruce, A.J. 1987a. Three new species of commensal shrimps from Port Essington, Arnhem Land, Northern Australia (Crustacea: Decapoda: Palaemonidae). *The Beagle, Occasional Papers of the Northern Territory Museum of Arts and Sciences* **3**(1) (1986): 143-166.

Bruce, A.J. 1987b. Records of three palaemonid shrimps new to the Australian fauna. *The Beagle, Records of the Northern Territory Museum of Arts and Sciences* **4**(1): 57-60.

Bruce, 1987c. Notes on some Indo-Pacific Pontoniinae, XLIV. *Periclimenes darwiniensis* sp. nov., from the Northern Territory, Australia (Decapoda, Caridea). *Crustaceana* **52**(1): 29-39.

Bruce, A.J. 1987d. Re-descriptions of two little-known Indo-West Pacific palaemonid shrimps, *Periclimenes calmani* Tattersall and *P. delagoae* Barnard. *Journal of Natural History* **21**: 1415-1432.

Bruce, A.J. 1988a. A new palaemonid shrimp from the *Zostera*-beds of Moreton Bay, Queensland, Australia (Decapoda: Palaemonidae). *The Beagle, Records of the Northern Territory Museum of Arts and Sciences* **5**(1): 105-114.

Bruce, A.J. 1988b. The shrimp fauna of a small tropical reef, the East Point Fish Reserve, Darwin. In: Larson, H.K., Michie, M.G. and Hanley, J.R. (eds), *Darwin Harbour, Proceedings of a Workshop on Research and Management held in Darwin, 2-3 September 1987*. Australian National University, North Australia Research Unit Mangrove Monograph **4**: 226-245.

Bruce, A.J. 1990a. A new cnidarian - associated palaemonid shrimp from Port Essington, Cobourg Peninsula, Australia. *Indo-Malayan Zoology* **6**(1989): 229-243.

Bruce, A.J. 1990b. Recent additions to the pontoniine shrimp fauna of Australia. *The Beagle, Records of the Northern Territory Museum of Arts and Sciences* **7**(2): 9-20.

Bruce, A.J. 1991. Shallow water palaemonoid shrimps from New Caledonia (Crustacea: Decapoda). In: Richer de Forges, B. (ed.), *Le benthos des fonds meubles des lagons de Nouvelle - Calédonie*. Vol. 1. Études et Théses: 211-279. ORSTOM; Paris.

Bruce, A.J. 1992. Decapod Crustacea-Caridea. In: Russell, B.C. and Hanley, J.R. (eds). *The Biological Resources and Heritage Values of the Cartier and Hibernia Reef Systems, Timor Sea*: Pp 83-89. Museum and Art Gallery of the Northern Territory: Darwin.

Bruce, A.J. 1993a. Darwin's Harbour shrimps. *Nature Territory* **3**: 35-37.

Bruce, A.J. 1993b. Additions to the marine caridean fauna of Hong Kong, with a description of a new species of *Onycocaris* (Crustacea: Decapoda: Palaemonidae) from Tuvalu. In: Morton, B.S. (ed.), *Proceedings of the Fourth International Marine Biological Workshop: The Marine Fauna and Flora of Hong Kong and Southern China, Hong Kong, 11-29 April 1989* Vol. 1: 329-343. Hong Kong University Press; Hong Kong.

Bruce, A.J. 1993c. Pontoniine shrimps from the Zoological Museum, Copenhagen. *Journal of Natural History* **28**: 829-840.

Calman, W.T. 1939. Crustacea: Caridea. *Scientific reports of the John Murray Expedition* **6**: 183-224.

Chace, F.A. and A.J. Bruce. 1993. The Caridean shrimps (Crustacea: Decapoda) of the *Albatross* Phillippine Expeditions, 1907-1910, Part 6. Superfamily Palaemonoidea. *Smithsonian Contributions to Zoology* **543**: i-vii, 1-152.

Clark, A.H. 1921. A monograph of the existing crinoids. 1. The comatulids, 2. *Bulletin of the United States National Museum* **82** (2): i-xxv, 1-770.

Dana, J.D. 1852. *Conspectus Crustaceorum quae in Orbis Terrarum circumnavigatione, Carolo Wilkes e Classe Reipublicae Foederatae e Duce, lexit et descripsit. Proceedings of the Academy of Natural Sciences, Philadadelphia* **1852**: 10-28.

Dana, J.D. 1855. Crustacea. *The United States Exploring Expedition during the years 1838, 1839, 1840, 1841, 1842 under the command of Charles Wilkes, U.S.N.*, **13**: atlas, Pp. 1-27, pls 1-96.

Duris, Z., and Bruce, A.J. 1995. A revision of the "*petitthouarsi*" - group of species of the genus *Periclimenes* Costa (Crustacea: Decapoda: Palaemonidae). *Journal of Natural History* **29**(3): 610-671.

Forsskål, P. 1775. *Descriptiones Animalium, Avium, Amphibiorum, Piscium, Insectorum, Vermium; quae in Itinere Orlentali Observavit*. Pp. 1-19, i-xxxii, 1-164. Haunia: Heineck et Faber.

Fujino, T. and Miyake, S. 1969a. On two new species of palaemonid shrimps from Tanabe Bay, Kii Peninsula, Japan (Crustacea, Decapoda, Palaemonidae). *Publication of the Seto Marine. Biological Laboratory* **17**(3): 143-154.

Fujino, T. and Miyake, S. 1969b. *Typton dentatus* sp. nov., from the Ryukyu Islands, Japan with a discussion on the generic characters (Decapoda, Palaemonidae). *Ohmu* **2**: 79-86.

Gordon, I. 1935. On new or imperfectly known species of Crustacea Macrura. *Journal of the Linnean Society of London, Zoology* **39**: 307-351.

Gurney, R. 1936. Notes on some decapod crustacea from Bermuda. III-V. *Proceedings of the Zoological Society of London* **1936**: 619-630.

Gurney, R., and Lebour, M.V. 1941. On the larvae of certain Crustacea Macrura, mainly from Bermuda. *Journal of the Linnean Society of London, Zoology* **41**: 89-181.

Heller, C. 1861. Synopsis der in rothen Meere vorkommenden Crustaceen. *Verhandlungen des kaiserlich - königlichen zoologish - botanischen Gesellschaft in Wien* **11**: 3-32.

Holthuis, L.B. 1950. The Decapoda of the Siboga Expedition, Part X. The Palaemonidae collected by the Siboga and Snellius Expeditions, with remarks on other species, 1. Subfamily Palaemonidae. *Siboga Expedition Monograph* **39a**: 1-268.

Holthuis, L.B. 1951. The Subfamilies Euryrhynchinae and Pontoniinae. A general revision of the Palaemonidae (Crustacea Decapoda Natantia) of the Americas. II. *Allan Hancock Foundation Publication, Occasional Paper* **11**: 1-332.

Holthuis, L.B. 1952. The Decapoda of the Siboga Expedition. Part XI. The Palaemonidae collected by the Siboga and Snellius Expeditions with remarks on other species. II. Subfamily Pontoniinae. *Siboga Expedition Monograph* **39a**[10]: 1-252.

Holthuis, L.B. 1958. Contributions to the knowledge of the Red Sea, 8. Crustacea. Decapods from the northern Red Sea (Gulf of Aqaba and Sinai Peninsula). 1. Macrura. *Bulletin of the Sea Fisheries Research Station, Israel* **17**(8-9): 1-40.

Johnson, D.S. 1961. A synopsis of the Decapoda Caridea and Stenopodidea of Singapore, with notes on their distributions and a key to the genera of Caridea occurring in Malayan waters. *Bulletin of the National Museum, Singapore* **30**: 44-79.

Johnson, D.S. 1967. On some commensal decapod crustacea from Singapore. (Palaemonidae and Porcellanidae). *Journal of Zoology, London* **153**: 499-256.

Johnson, D.S. 1976. Prawns of the Malacca Straits and Singapore waters. *Journal of the Marine Biological Association of India* **18**: 1-54.

Kemp, S. 1915. Crustacea Decapoda. Fauna of the Chilka Lake. *Memoirs of the Indian Museum* **5**: 199-325.

Kemp, S. 1922. Notes on Crustacea Decapoda in the Indian Museum. XV. Pontoniinae. *Records of the Indian Museum* **24**: 113-288.

Kemp, S. 1925. Notes on Crustacea Decapoda in the Indian Museum. XVII. On various Caridea. *Records of the Indian Museum* **27**: 249-343.

Kingsley, J.S. 1878. Notes on the North American caridea in the Museum of the Peabody Academy of Science at Salem, Massachusetts. *Proceedings of the Academy of Natural Sciences, Philadelphia* **1878**: 89-98.

Kubo, I. 1940a. Pontoniinae. Studies on Japanese Palaemonoid shrimps. II. *Journal of the Imperial Fisheries Institute, Tokyo* **34**: 31-75.

Kubo, I. 1940b. A new shrimp, *Harpilius imperialis*. *Journal of the Imperial Fisheries Institute, Tokyo* **34**: 1-4.

Lowry, J.K. and Springthorpe, R. 1992. Crustaceans. *ReefBiology: A Survey of Elizabeth and Middleton Reefs, South Pacific. Kowari* **3**: i-xviii, 1-230.

Man, J.G. de. 1881. Carcinological studies in the Leyden Museum. No. 1. *Notes of the Leyden Museum* **3**: 121-144.

Man, J.G. de. 1902. Die von Herrn Professor Kükenthal im Indischen Archipel gesammelten Dekapoden und Stomatopoden. In: Kükenthal, W. Ergebnisse einer zoologischen Forschungsreise in den Molukken und Borneo. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft* **25**: 467-929.

Miers, E.J. 1884. Crustacea. In: *Report of the Zoological Collections made in the Indo-Pacific Ocean during the Voyage of H.M.S. "Alert" 1881-2*. Pp. 178-322, 513-575. British Museum: London.

Miyake, S. and Fujino, T. 1967. On four species of Pontoniinae (Crustacea, Decapoda, Palaemonidae) found in Porifera inhabiting the coastal regions of Kyushu, Japan. *Journal of the Faculty of Agriculture, Kyushu University* **14**: 275-291.

Nobili, G. 1901. Decapode e Stomatopodi Eritrei del Museo Zoologico dell'Universita di Napoli. *Annuario del Museo Zoologico della R. Universita di Napoli* (n.s.) **1**(3): 1-20.

Nobili, G. 1904. Diagnoses préliminaires de vingt-huit espéces nouvelles de Stomatopodes et Décapodes Macroures de la Mer Rouge. *Bulletin du Muséum d'Histoire Naturelle, Paris* **10**: 288-238.

Nobili, G. 1905. Décapodes nouveaux des côtes d'Arabie et du Golfe Persique. (Diagnoses préliminaires). *Bulletin du Muséum National d'Histoire Naturelle, Paris* **11**: 158-164.

Nobili, G. 1906. Crustacés Décapodes et Stomatopodes. Mission J. Bonnier et Ch. Perez (Golfe Persique, 1901). *Bulletin scientifique de la France et de la Belgique* **40**: 13-159.

Paulson, O. 1875. Investigations on the crustacea of the Red Sea with notes on crustacea of the adjacent seas. Part 1. Podophthalmata and Edriophthalmata (Cumacea). Pp. i-xiv, 1-144. Kiev.

Rafinesque, C.S. 1815. Analyse de la Nature ou Tableau de l'Univers et des Corps organisé. Pp.224. Palermo.

Rathbun, M.J. 1902. The Brachyura and Macrura of Porto Rico. *Bulletin of the United States Fisheries Commission* 20(2): 1-127.

Schenkel, E. 1902. Beitrag zur Kenntnis der Dekapodenfauna von Celebes. *Verhandlung der Naturforschenden Gesellschaft in Basel* **13**: 485-585.

Stimpson, W. 1860. Prodromus descriptionis animalium evertebratorum quae in Expeditione ad Oceanum Pacificum Septemtrionalem a Republica Federato missa, C. Ringgold et J. Rodgers Ducibus, Observavit et descripsit. *Proceeding of the Academy of Natural Sciences of Philadelphia* **1860**: 22-48.

Wheeler, J.F.G. 1944. Lunar periodicity in animals. *Revue Agricole de l'Ile Maurice* **23**(4): 151-156.

Wheeler, J.F.G., and F.A. Brown. 1936. The periodic swarming of *Anchistioides antiguensis* (Schmitt) (Crustacea Decapoda) at Bermuda. *Journal of the Linnean Society of London, Zoology* **39**: 413-428.

Yokoya, Y. 1936. Some rare and new species of decapod crustaceans found in the vicinity of the Misaki Marine Biological Station. *Japanese Journal of the Zoology* **7**: 129-146.

Zehntner, L. 1894. Crustacés de l'Archipel Malai. Voyage de MM. M. Bedot et C. Pictet dans l'Archipel Malais. *Revue Suisse de Zoologie et Annales du Musée d'Histoire Naturelle de Genéve* **2**: 135-214.

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